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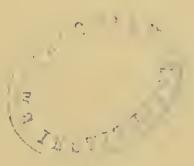

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LONDON

FOR THE YEAR 1869.

I. *Descriptions of Nine New Species of* Buprestidæ. By Edward Saunders.

[Read 4th January, 1869.]

The species here described belong to the genera *Sternocera, Julodis, Catoxantha, Chrysaspis, Psiloptera, Pseudhyperantha, Hyperantha,* and *Acherusia.*

Two of these, *Chrysaspis* and *Pseudhyperantha,* are new genera.

Chrysaspis will, I believe, shortly be described by M. Henri Deyrolle, whose manuscript name I have here employed, and therefore I have assigned no characters to it. The second, *Pseudhyperantha,* is one of the most anomalous insects with which I am acquainted in this Family; it has the form of *Hyperantha,* and the scutellum of *Belionota,* both of which genera belong to the section "*Buprestides vrais*" of Lacordaire; and yet it is really referable to the "*Chalcophorides*" of that author, in which group I have placed it.

Sternocera multipunctata (Pl. I. fig. 2).

S. viridis; thorace foveolis minutis excavato; elytris lineis quatuor fovearum albidarum ornatis; subtus abdominis segmentis utrinque albifoveatis.

Above, bright green; elytra each with four rows of small, round, white pubescent foveæ, and a larger one at

the base, midway between the suture and the lateral margin. Beneath, golden-green; sides of abdominal segments, each with a round white pubescent fovea.

Head largely punctured, rugose just above the mouth. Thorax not quite twice as broad at the base as long; anterior margin rounded, a little more than half as long as the base; sides rounded; base with a slight median lobe; surface very shining, pitted with small round foveæ, filled with white pubescence. Elytra twice as long as wide, finely and irregularly punctate, each with a large round white pubescent fovea at the base, and four rows of smaller ones, none of which attain the apex; sides slightly sinuate above the middle; apex of each very finely bidentate; on each side above the apex is a somewhat stronger tooth. Beneath, punctured; breast, and each abdominal segment, with a white pubescent fovea on each side; legs punctured.

Length 16½ lines; breadth 7 lines.

Hab.—Cochin China.

Allied to *S. sternicornis*, Linn., but differs in the pits of the thorax being much more regular and rounder; in the pubescent foveæ of the elytra being smaller and more numerous, and in the abdomen, each of whose segments has a white spot on the side, which does not exist in the Linnean species.

Julodis æneipes (Pl. I. fig. 4).

J. cyanea; thorace ruguloso, lineâ dorsali lævi elevatâ; elytris punctatis, maculis albidis sagittatis ornatis: subtus rugosa, albo-hirta; pedibus æneis.

Cyaneous. Thorax with a greenish tinge, its central carina, and a small round spot on each side of it above the middle, cyaneous. Elytra each with four rows of yellowish-white pubescent sagittate spots.

Head longitudinally rugose, pubescent, especially about the mouth. Thorax at the base once and three-quarters as broad as long; anterior margin rounded, two-thirds as long as the base; sides rounded; base with a narrow median lobe; surface rugose, a dorsal carina, widest behind, which does not touch the base or the anterior margin, and a small round spot on each side of it, smooth; the surface between the rugosities yellowish-pubescent, the pubescence especially visible near the

central basal lobe, where it is of a whiter colour. Elytra much wider than the thorax at their shoulders, nearly twice as long as wide, very largely and rugosely punctured, each with four raised lines, and four rows of foveolæ of sagittate form filled with whitish pubescence; a fifth row, of square or transverse foveæ, occurs between the fourth raised line and the lateral margin; sides slightly sinuate above the middle; apex rounded. Beneath, rugose, pubescent in irregular patches. Legs bronzy. (Antennæ wanting).

Length 18 lines; breadth 7 lines.

Hab.—East (Persia, ?).

Catoxantha Mouhotii (H. Deyr.), (Pl. I. fig. 1).

C. viridis; capite inter oculos excavato; thorace prope angulos posteriores testaceo, foveolis duabus ad basin positis; elytris maculis duabus flavis ornatis: subtus flava; pedibus cyaneis.

Head and thorax cyaneous, the latter with a somewhat square yellow-brown patch near each posterior angle. Elytra green with brown reflections, each with a transverse oval yellow spot, situate about a third of the entire length of the elytra from their apex. Beneath, flavous; a curved black line on the breast. Legs cyaneous. Antennæ black.

Head punctured, deeply impressed between the eyes. Thorax, at its base, not quite twice as broad as long; anterior margin slightly emarginate, a little more than half as long as the base; sides sinuate till a little above the posterior angles, then distinctly angulate and emarginate to the base; posterior angles acute; base with a large median lobe; surface finely and remotely punctured in the centre, sides rugose and impressed for two-thirds of their length, largely punctured on the basal third; disc with a slight dorsal line impressed at the base, and raised near its middle; on each side of it at the base is a large round fovea. Elytra twice and a quarter as long as wide, finely punctured; each with four slightly raised lines, visible chiefly on their apical half; sides subparallel, apex of each finely emarginato and dentate on the suture. Underside and legs finely punctured.

Length 31 lines; breadth 10 lines.

Hab.—Laas.

Chrysaspis viridipennis (Pl. I. fig. 5).

C. capite thoraceque atro-cyaneis, punctatis; hoc marginibus lateralibus viridibus; elytris aureo-viridibus, subrugulosis, apicibus denticulatis: subtus aureo-cuprea.

Head and thorax cyaneous black, the former green round the inner margins of the eyes, the latter with its lateral margins green. Elytra bright brassy-green with golden reflections on the sides. Beneath, fiery red. Legs green with golden reflections. Antennæ with the three basal joints green, the rest black.

Head punctured, deeply excavated between the eyes. Thorax, at the base, once and three-quarters as broad as long; anterior margin much raised, emarginate, a little more than half as long as the base; sides raised, diverging in nearly straight lines for half their entire length, then slightly angulate and subparallel to the base; posterior angles acute; base with a large rounded central lobe; surface punctured; disk somewhat triangularly raised, sides very rugosely punctured. Elytra finely and longitudinally rugose, sides slightly angulate at the shoulders, apex of each with seven or eight teeth. Underside and legs punctured.

Length 21 lines; breadth 8 lines.

Hab.—Gaboon.

Psiloptera Batesii (Pl. I. fig. 3).

P. capite thoraceque fusco-æneis, viridi-punctatis, hoc lineâ dorsali depressâ; elytris fuscis, viridipunctatis, foveolis aureis sparsis ornatis: subtus viridis, rugosa.

Head green. Thorax bronzy-brown, thickly punctured with green on the sides. Elytra bronzy-brown, with green punctures at the base and sides, and with several irregular round golden pubescent foveolæ. Underside and legs green. Antennæ with the first joint green, the rest bronzy.

Head rugose. Thorax twice as broad at the base as long; anterior margin a little more than half as long as the base; sides diverging rapidly for about half their length, then slightly emarginate to the posterior angles, which are somewhat produced and acute; base with a large shallow median lobe; surface remotely punctured

on the disc, and very thickly on the sides; disc with a widely impressed dorsal line; sides slightly impressed above the posterior angles. Elytra regularly punctate-striate, once and three-quarters as long as wide, finely and thickly punctured about the shoulders, with numerous irregular golden foveæ scattered over their surface; no foveæ however occur on the basal quarter; sides slightly sinuate above the middle; apex of each finely and obliquely truncate. Beneath, finely rugose; legs deeply punctured.

Length 15 lines; breadth 6 lines.

Hab.—Buenos Ayres.

I have named this species after Mr. H. W. Bates, Pres. Ent. Soc., who kindly presented it to me.

PSEUDHYPERANTHA, n. g.

Caput antennarum cavitatibus rotundis prope oculos positis; antennis a tertio articulo serratis. *Thorax* postice latior. *Scutellum* triangulare, elongatum. *Elytra* elongata, apicibus truncatis et bidentatis. *Prosternum* gibbosum. *Tarsi* dilati.

Head rounded in front; antennary cavities round, situate near the eyes just above the epistome; antennæ with the first joint elongate, subpyriform, longer than the second and third together; the second short; the third rather longer and pyriform; the rest serrate, and with a few long hairs. Thorax short, widest at the base. Scutellum of an elongate triangular shape, flat; in form most like that of *Belionota*. Elytra widest at the shoulders, apex of each widely truncate and bidentate. Prosternum much rounded; apical segment of the abdomen very long, bidentate. Femora and tibiæ nearly straight; tarsi with the joints of equal length, dilated.

The difficulty I have experienced with this genus has not been how to distinguish it from its allies, but to find its allies with which I might place it. As far as I can make out, it should be placed between *Capnodis* and *Cardiaspis*. It resembles, in general form, the genus *Hyperantha*, from S. America, but has the antennary pores on each side of their joints, so that it will come into the division "Chalcophorides" of Lacordaire. This brings it in form nearest to *Capnodis*, which is placed at the end of Lacordaire's division, and as *Cardiaspis* stands

in my arrangement at the beginning of the "Buprestides vrais" of that author, and resembles this species much in general characters, I think the present insect makes a convenient link between the two.

Pseudhyperantha jucunda (Pl. I. fig. 9).

P. cyaneo-nigra, polita, minutissime punctata; thorace postice flavicincto; elytris maculis quatuor transversis flavis ornatis, apicibus truncatis quadridentatis: subtus flava, cyaneo-ornata; pedibus cyaneis, flavo-ornatis.

Black, shining, with purple reflections. Head with a yellow streak between the eyes. Thorax with its base and lateral margins yellow. Elytra each with two short, narrow, transverse bands, one situate about a third of their length from the base, the other about two-thirds; there is also a small yellow spot on the lateral margin of each elytron close to the upper band. Beneath, yellow, posterior margins of the abdominal segments cyaneous; fourth segment entirely of that colour, except a small triangular spot in its middle; apical segment wholly blue. Thorax and breast variegated with blue. Legs and antennæ cyaneous; each thigh, beneath, with a streak of yellow.

Head punctured. Thorax widest at the base, finely punctured, with a larger puncture just above the scutellum; anterior margin elevated, and slightly produced; sides rounded just above the posterior angles; base slightly bisinuate. Elytra punctate-striate, wider than the thorax at their base, twice and a fifth as long as wide, slightly sinuate above the middle and again before the apex, which is widely and obliquely truncate, and armed on each elytron with two sharp teeth and two or three small irregular denticulations between them. Underside, and legs, finely punctured.

Length $10\frac{3}{4}$ lines; breadth $3\frac{1}{4}$ lines.

Hab.—Penang.

Hyperantha bella (Pl. I. fig. 8).

H. capite thoraceque nigris, punctatis, hoc marginibus lateralibus flavis; elytris punctatis, striatis, flavis, suturâ, vittâ laterali, fasciâ transversâ post medium positâ, apiceque nigris: subtus nigra, flavo-maculata.

Head and thorax black, the latter with its lateral margins flavous; scutellum black. Elytra flavous, orange-coloured near their apex, with their suture black for two-thirds of its length, where it is met by a transverse band of the same colour; the apex and a vitta, extending from the shoulder to just above the transverse post-median band, are also black. Beneath, black, with a yellow spot in the middle of each abdominal segment, the last excepted. Legs and antennæ black.

Head punctured, impressed between the eyes. Thorax twice as wide at the base as long; anterior margin much produced in the centre, and rounded, half as long as the base; sides rounded; posterior angles acute, overlapping the shoulders of the elytra; base nearly straight; surface finely punctured, with a slightly impressed dorsal line; sides raised. Elytra punctate, striate, three of the interstices on each more raised than the rest, twice and a quarter as long as wide; sides subparallel; apex of each widely and obliquely truncate, armed with two short spines. Underside, and legs, punctured, covered with short silvery pubescence.

Length 9 lines; breadth 3 lines.

Hab.—Brazil.

Allied to *H. interrogationis*, but much shorter in relation to its width. The markings also are very different, and I cannot think that any variation in the spread of the yellow colour in *interrogationis* could form the markings observable on the species above described.

Acherusia Parrii (Pl. I. fig. 6).

A. nigro-cyanea; capite thoraceque punctatis; elytris humeris maculâque utrinque prope apicem igneo-cupreis, fortiter punctato-striatis: subtus punctata; pedibus punctatis.

Dark cyaneous. Elytra with a spot on each below the base covering the shoulder, and another just above the apex, coppery red.

Head punctured. Thorax once and three-quarters as broad as long; anterior margin half as long as the base, its angles closely surrounding the eyes; sides diverging for about half their length, then rounded and very slightly sinuate to the posterior angles, which are acute; base with a pointed central lobe; surface punctured,

finely and transversely wrinkled behind. Elytra once and a third as long as wide, deeply punctate-striate, the striæ commencing at a little distance from the base, leaving a smooth space between them and it; sides sinuate above the middle, swelling out considerably beyond it; apex slightly attenuate and truncate, with a small external tooth. Underside, and legs, deeply punctured.

Length 4 lines; breadth 2 lines.

Hab.—Brazil.

I have named this species in honour of Major Parry, from whose collection it was obtained.

Acherusia piliventris (Pl. I. fig. 7).

A. ænea; capite thoraceque punctatis, hoc marginibus lateralibus albipubescentibus; elytris punctato-striatis, humeris roseo-cupreis, apice rotundato: subtus dense albipubescens.

Dark bronzy-brown, with cyaneous reflections. Elytra with their shoulders coppery-purple. The sides of the thorax, and the whole underside, covered with long gray hairs.

Head punctured, covered with long gray pubescence. Thorax twice as wide at the base as long; anterior margin elevated, half as long as the base, its angles closely embracing the eyes; sides rounded; posterior angles acute; base with a pointed central lobe; surface finely wrinkled, and punctured transversely; sides covered with gray pubescence. Elytra once and a sixth as long as wide, deeply punctate-striate; sides sinuate above the middle, the sinuation extending nearly across each elytron; shoulders rather prominent; apex rounded. Underside, and legs, densely covered with silvery-gray hairs. Antennæ cyaneous.

Length 4 lines; breadth 2 lines.

Hab.—Brazil.

II. *Description of a New Species of* Hestina, *which mimics a* Danais. By Arthur G. Butler, F.L.S., F.Z.S.

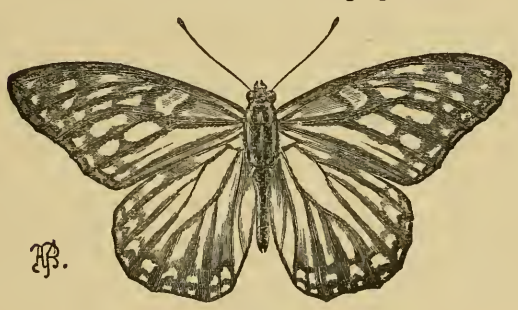
[Read 1st February, 1869.]

The following species has been lent me for description by G. Waters, Esq.: it is remarkable as being an excellent mimic of *Danais Juventa*, a widely distributed and tolerably common East Indian and Oceanic species.

Fam. NYMPHALIDÆ.

Gen. Hestina, Westwood.

(Dbl. and Hew. Diurn. Lep. p. 281).



Hestina Zella, sp. nov.

♂. Alæ suprà albæ, paululùm virescentes; cellâ discoidali anticarum macularitèr cinerascente; venis omnibus latè cinereo-nigrescentibus; alæ anticæ fasciolis tribus obliquè transversis discoidalibus angulatis nigris, unâque nervulos primum et secundum medianos connectente; margine apiceque nigrescentibus, maculas tres subapicales et octo submarginales viridi-albas includentibus; punctis septem vel octo marginalibus cinereis sub-obsoletis; alæ posticæ maculâ costali squamosâ nigricante; margine externo nigrescente, maculas octo submarginales albas punctaque octo marginalia alba includente; corpus nigrum, capite albo-punctato, thorace cinereo-albostriato, abdomine lateraliter albo, antennis nigris. Alæ subtus fusco-albidæ, areâ anali anticarum cærulescente, venis interno-discoideis fasciolisque discoideis nigris, characteribus aliis velut suprà positis,

at pallidè olivaceis ; corpus nigrum, albo-maculatum : proboscis fulva.

Exp. alar. unc. 2, lin. 10.

Habitat in Oriente (regione speciali incognitâ).

This beautiful little species is most nearly allied to *Hestina Mena* of Moore; it is probably intermediate between that species and the *assimilis* of Linnæus, and is smaller than any species yet described; in general form perhaps it is most like Felder's *Japonica* (*Diagoras*, Hewits.).

The collection from which this butterfly was obtained was made in various localities; it contained several species from the Continent of India, and others from some of the Eastern islands in which local modifications of *Danais juventa* occur. On the mimetic theory, the *Hestina* ought to inhabit the same country as the species which it mimics. A specimen in the Hope Collection is labelled "E. Indies."

III. *Description of a new Genus and Species of* Prionidæ.

By Edmund Thomas Higgins.

[Read 15th February, 1869.]

I trust that no apology will be considered necessary on my part, for presenting to the Society an isolated description of a Coleopterous Insect, when it is considered that it is remarkable in many respects, and forms a new genus, the publication of which will help students to understand the relationship of the allied forms more clearly than would be possible without the knowledge of this form. It is a member of the Longicorn family *Prionidæ*, and tends to connect the *Acanthophorus* group (see Pl. II. fig. 2) of the Old World, with the *Derobrachus* group (see fig. 3) of the New World.

Ommatomenus, nov. gen.

Genus *Acanthophoro* et *Doryceræ* affine, a quibus differt, inter alia, oculis (♂) infra contiguis, supra valde approximatis.

♂. Mandibulæ breves, minus latæ, extus vix rotundatæ, apice arcuatæ et valde acutæ. Palpi breves, maxillares labialibus vix longiores, articulis ultimis subcylindricis, truncatis. Antennæ longitudine corporis, articulis 3-10 apice intus valde productis et minutissime punctatis, opacis. Thorax transversus, lateribus utrinque valde trispinosis; spinis duabus anterioribus depressis, latis, basi concretis. Elytra elongato-elliptica, angulis suturalibus spinosis. Prosternum lanceolatum, apice coxas anticas superante et deorsum spectante. Pedes graciles, femoribus linearibus, tibiis supra et infra profunde canaliculatis, tarsis posticis angustis, articulo tertio lobis gracilibus mucronatis.

This genus is distinguished from *Tithoes* and *Acanthophorus*, two other genera of the same group, by its voluminous eyes, nearly meeting above and beneath; from *Dorycera* (White) it differs in the form of the body and prosternum, and in other characters. It presents a great resemblance to species of *Derobrachus* from Mexico, both in the form of its eyes, the spines of the thorax, and the shape of the antennal joints.

I may remark that the formation of a new genus is indicated, in a note under *Dorycera* * in Lacordaire's

* As mentioned by Lacordaire, Mr. Adam White's name *Dorycera* is pre-occupied by Meigen for a genus of *Diptera*.

"Genera," vol. viii, p. 71, as necessary for the reception of *Acanthophorus megalops*, described by Mr. Adam White in the first part of the British Museum Catalogue of Longicorns; this is a fine insect, from Fernando Po, which, I have satisfied myself from examination of the type in the British Museum, with the valuable aid of Mr. Charles O. Waterhouse, is congeneric with the new species described below.

Ommatomenus sericatus, n. sp. (Pl. II. fig. 1).

♂. Long. (mandib. exclusis) 29-34 lin.

Elongato-ellipticus, paulo convexus; saturate castaneus, antennis basi nigris. Caput crebre subtiliter punctatum; fronte concava, punctata, sericeo-fulvo-pubescente. Thorax supra paulo inæqualis, subtiliter punctatus, dense sericeo-fulvo-pubescens; disco antico spinisque nudis. Scutellum pentagonum, in medio subtiliter punctatum, marginibus lævibus. Elytra ante medium paulo rotundato-ampliata, apicem versus angustata, angulis suturalibus breviter acuto-spinosis, supra subtiliter coriacea, opaca et punctulata, humeris punctato-rugosis; plagis confluentibus sericeo-fulvis ornata. Sterna omnia dense sericeo-fulvo-pubescentia; abdomen nudum, nitidum, segmento ultimo transverso, late emarginato.

The body is of an elongate elliptical shape, dilated behind the middle of the elytra, and very moderately convex; the colour is dark chesnut brown, with the basal part of the antennæ black. The head is finely and closely punctured, with the front concave and clothed with silky fulvous hairs: the hind part of the crown has not the well-marked ridge which distinguishes *Ommatomenus megalops* (White). The thorax is a little uneven above, and very finely punctate, not rugose-punctate, as in *O. megalops*. The sutural angles of the elytra are furnished with a short acute spine; above, the elytra are of a leathery texture, and marked with numerous very fine punctures; there are a few coarser punctures near the shoulders; the surface is opaque, and adorned with numerous patches of fine silky reddish-fulvous pubescence, which has a rich glow in certain lights. The sterna are densely clothed with longish silky fulvous pile, but the abdomen is smooth and shining.

Obtained from near the mouth of the Niger, by Mr. Simpson.

IV. *On a new genus and some new species of* Coleoptera, *belonging to the family* Lucanidæ. By Charles O. Waterhouse.

[Read 1st March, 1869.]

I wish to bring before the Entomological Society's notice this evening, four species of *Coleoptera*, belonging to the family *Lucanidæ*, which I believe to be as yet undescribed.

One of these, although by no means the most remarkable at first sight, possesses such peculiarities as to make it necessary to form a new genus for its reception.

This insect, which is from Northern India (I believe from the Cashmere district, although I have no precise locality) is entirely dullish black, and its general appearance led me at first to seek its place near *Dorcus*, but finding it differently constructed, I next referred it to and left it in the genus *Cladognathus*. Upon further examination, however, I find that the mentum is unlike that of any other species of *Lucanidæ* that I have examined; the eye is moreover entirely divided by the canthus, a character quite strange to *Cladognathus* and to the other genera with which it could possibly be associated; the produced portion of the prosternum between the coxæ is very narrow and grooved, a character, I believe, without a parallel in the *Lucanidæ;* and finally, the posterior tibiæ are much enlarged at the apex, which is only to be found in the genus *Lucanus*, and even there, the enlargement does not, except in the females, exist to such an extent as in the insect now in question. I therefore propose to make a new genus of it, and to call it *Aulacostethus*, which may be briefly characterized as follows:—

Aulacostethus, gen. nov.

Mentum broader than long, bowed in front, with the posterior angles rounded; *eyes* entirely divided by the canthus, which is slender; *prosternum* between the anterior coxæ narrow, with parallel sides, longitudinally canaliculate; the four posterior *tibiæ* much enlarged at the apex, each furnished on the outside in the middle with a small tooth; *tarsi* somewhat short, the basal four joints of each furnished beneath at the extreme apex with two pencils of fine bristles.

Aulacostethus Archeri, sp. nov. (Pl. III. fig. 1).

♂. Niger, sub-opacus; mandibulis elongatis, intus bidentatis; capite subquadrato, depresso, antice contracto, fronte excavata, lateribus fortiter rugoso-punctatis; oculis omnino a cantho divisis; thorace transverso, lateribus sub-rectis, angulis posticis oblique truncatis, marginibus anterioribus et posterioribus elytrorumque basi rugoso-punctatis; tibiis anticis apicibus fortiter bidentatis, et extus denticulis quatuor armatis; tibiis posticis extus in medio unidentatis, apicibus singulariter ampliatis; prosterno longitudinaliter carinato.

Long. (mandibulis exclusis) 17½ lin. (37 mill.); mandib. 7½ lin. (16 mill.).

Black, somewhat dull. *Head* flattened, one quarter as broad again as long, slightly narrowed towards the front to the insertion of the antennæ, then suddenly contracted, forehead excavated, projecting over the clypeus, which is transverse and gently emarginate; the head is contracted posteriorly to be received into the thorax, the posterior margin and the portions over the base of the mandibles shining, the rest of the surface rendered dull by extremely fine granulations, on the disc there are a few larger punctures, and towards the sides and the parts about the eyes punctured, a patch reaching from the eyes almost to the posterior angles of the head, very rugosely punctured. Mandibles about equal in length to the head and thorax together, very gently curved, with a large blunt tooth springing from the upper surface, distant from the base about one third the length of the mandible, another smaller tooth, also springing from the upper surface, being situate near the apex of the mandible, gives it the appearance of being bifid. Mentum twice and a half as broad as long, slightly convex, with the basal portion in the middle depressed; rounded in front, the posterior angles rounded, slightly overlapping the submentum, the whole surface coarsely transversely reticulate. The 8th, 9th, and 10th joints of the antennæ forming the club, the 8th joint half spongy, the 9th and 10th entirely so. *Thorax* twice as broad as long, posterior angles obliquely truncate in front, bis-emarginate; sides rounded at the anterior angles, gently contracted posteriorly, and again projecting at the truncature of the angles, posterior

margin almost straight, the disc somewhat shining, towards the sides the surface is rendered dull by extremely fine granulations, anterior border strongly margined, and with the margin towards the sides rugosely punctured; side and posterior margins incrassate, the sides of the thorax sparingly but distinctly punctured, the posterior margins rugosely punctured. *Scutellum* broader than long, with the apex rounded, with a few small punctures. *Elytra* semi-opaque, broadest at the basal quarter, then gradually contracting to the apex, the extreme base rugosely punctured, the whole surface, except the suture and near the scutellum, thickly covered with very minute granules, an indistinct smooth line reaches from the shoulder nearly to the apex. Anterior *tibiæ* distinctly punctured, the punctures inclined to form longitudinal rows, the apex of the tibiæ is produced beyond the insertion of the tarsus to the third joint, the produced part turned outwards, bifurcate; the outer edge of the tibiæ armed with four small teeth, the basal one very small; the four posterior tibiæ coarsely punctured, much enlarged at the apex, which is terminated by three strong teeth;* each tibia armed with a small sharp tooth on the outside near the middle. *Tarsi* somewhat short, the basal four joints of each furnished beneath at the extreme edge with two pencils of fine fulvous bristles. *Prosternum* between the anterior coxæ narrow, parallel, deeply longitudinally grooved.

Hab.—N. India. In the British Museum.

The British Museum is indebted to S. Archer, Esq., Assistant Surgeon, H. M. 98th Regiment, for this and some other interesting Indian *Coleoptera*. It is possible that the species above described may be known to some by the MS. name *Cladognathus Batesii*.†

The next insect I have to mention is a species of *Cladognathus* closely resembling *inclinatus* of Motschulsky, from which it may be distinguished by its slightly greater

* One of the posterior tibiæ has four teeth, the central one of the usual three being divided.

† [This is doubtless the insect which in vol. iii. (dated 1868) of Gemminger and Von Harold's "Catalogus Coleopterorum *hucusque descriptorum*" is cited as "*Cladognathus Batesi*, Parry, Trans. Ent. Soc., 1869." The reference by anticipation to this volume has shared the common fate of prophetic utterances.—*Sec. Ent. Soc.*]

convexity and shining appearance; the mandibles have only two distinct teeth; the forehead is not furnished with a horizontal lamina, and the head behind the eyes is simply inflated and not triangularly produced. The exact locality of the specimen from which I have drawn up my description is not known; it is either Japan or the Indian Archipelago. The specimen is lent me by Major Parry, who brought it me for description with the MS. name *C. Motschulskii*.

Cladognathus Motschulskii (Parry), sp. nov.

Elongatus, subdepressus, punctatissimus, subnitidus, nigro-castaneus; capite subquadrato, postice angulis nullis, fronte excavata, angulis ante oculos prominulis; clypeo concavo, quadrato, lateribus parallelis, angulis anticis oblique truncatis, apice emarginato; mandibulis elytrorum longitudine vix brevioribus, inclinatis, intus dentibus duobus majoribus et 2-3 parvis armatis; thorace capite latiore, transverso, convexiore, lateribus vix rotundatis; elytris angulis humeralibus obtusis; tibiis anticis quatuor spinulosis, mediis unispinosis, posticis inermibus; prosterno postice vix compresso.

Long. (mandib. exclusis) $16\frac{3}{4}$ lin. (35 mill.); mandib. 8 lin. (17 mill.).

This species very much resembles in general form and colour the *C. inclinatus* of Motschulsky (Etudes Ent. pt. 10, 1861, p. 13). The mandibles, however, are less deflexed, and are furnished with two larger teeth, one rather below the middle, and another near the apex; between these there are indications of two or three small teeth, and between the second and the apex there are two small teeth. The forehead is more deeply excavated, and is not provided with a horizontal lamina between the mandibles as in *C. inclinatus*; the clypeus has the sides straight, the front margin formed of two lines which would meet at an obtuse angle, if the vertex were not slightly emarginate. The sides of the head behind the eyes are nearly straight, the posterior angles completely rounded. The head is less depressed, the surface is more finely granular, the disc being slightly impressed and

smooth. The thorax is slightly more convex, the sides are rather less parallel, but scarcely rounded; the surface is more finely granulose, the disc being almost smooth, sparingly punctured with distinct punctures. The elytra are smoother, and the specimen before me has the humeral angles obtuse. The tibiæ are shorter and stouter, the anterior tibiæ, besides the usual bifurcate apex, are furnished with one distinct tooth only near the apex. The apex of the posterior tibiæ is enlarged above. The prosternum, which is produced behind the anterior coxæ, although slightly compressed, is not lamelliform as in *C. inclinatus*.

Hab.—Japan? or Indian Archipelago. In Major Parry's Collection.

The next insect is another species of *Cladognathus*, closely allied to *C. Maclellandi*, with the type specimen of which Major Parry (who called my attention to this also) compared his examples, and considers them to be distinct. There are two specimens (♂ and ♀) in the National Collection, and I have drawn up my description from them. I may mention that Major Parry received this insect with the name *C. Maclellandi;* he proposes the name of *impressus* for it.

Cladognathus impressus (Parry), sp. nov.

♂. (var. minor?). Rufo-castaneus, nigrescens, parum convexus, nitidus; capite transverso, subtiliter granuloso, punctis sparsis intermixtis, ante oculos parum triangulariter producto, pone oculos rotundato, fossa inter mandibula et oculos impresso; fronte leniter concava; clypeo hexagono. Thorace transverso, subtilissime granuloso, punctis parvis et sparsis intermixtis, disco sublævi, angulis posticis oblique truncatis, angulo a truncatione et latere formato producto. Elytris rufo-castaneis, sutura et circum scutellum nigrescentibus, dense punctatis, arcuatim attenuatis, basi thorace angustiori. Tibiis anticis apice bifurcatis, extus subserratis, dentibus parvis 5-6 armatis; posterioribus quatuor extus in medio dente parvo armatis; tarsis fuscis.

Long. (mandib. exclusis) 9¼ lin. (19½ mill.); mandib. 1½ lin. (3 mill.); lat. 4⅕ lin. (8¾ mill.).

♀. Angustior; mandibulis brevibus, intus unidentatis; capite fortiter denseque punctato, vertice lævi, inter oculos et mandibula elevatione parva lævi, ante oculos contracto, antice truncato; clypeo parvo, transverso, angulis rotundatis; thorace disco fortiter et sparsim punctato, lateribus parallelis dense fortiterque punctatis, angulis posticis truncatis; elytris disco sparsim, latera versus dense punctulatis, lateribus apiceque fortiter punctatis; tibiis anticis punctatis, excurvatis, apicibus tridentatis, extus 1-2 denticulatis.

Long. (cum mandib.) 8 lin. (17 mill.); lat. 3½ lin. (7½ mill.).

Hab.—India. In the British Museum.

The ♂ in the British Museum is from East India, the ♀ from North India.

The last insect I have to mention belongs to the genus *Chiasognathus*, and should, perhaps, have been mentioned first. The form of the mandibles, which, when viewed laterally, somewhat resemble a small greek τ, the granulation of the elytra, and yellow colour, and the curiously bowed middle tibiæ, will serve to distinguish the ♂, whilst the evenly rounded sides of the thorax will separate the ♀ from the other species of the genus.

Chiasognathus peruvianus, sp. nov. (Pl. III. figs. 2, 3).

♂. Æneus, fuscescens; mandibulis basi supra subtusque fortiter unidentatis, et apicibus intus denticulo armatis; capite, thorace, scutello, corpore toto subtus, femoribusque flavo-pubescentibus; elytris cupreis, purpureo-micantibus, sub-opacis; tibiis anticis æneis, basi flavis, incurvatis, apicibus bidentatis, intermediis valgis, flavis, extus unidentatis, posticis basi et in medio constrictis, flavis, apicibus fuscis, extus unidenticulatis.

Long. (mandib. exclusis), 1 unc. (26 mill.); mandib. 3¾ lin. (8 mill.)

♀. Latior, mandibulis brevibus, basi extus obtuse dentatis; thorace lateribus fortiter rotundatis; elytris æneoscentibus, rugulosis; tibiis anticis latis, extus quadridentatis, quatuor posticis rectis, extus fortius unidentatis.

Long. (cum mandib.) 13½ lin. (28 mill.).

♂. Æneous, slightly tinged with coppery-brown. *Head* transverse, with a transverse impression between the eyes; the portion of the head behind this impression, and that about the eyes, almost without punctures; the disc closely punctured; the sides of the head almost parallel, the anterior angles rectangular, anterior margin furnished above the base of each mandible with a tubercle, the portion between them, and on each side of them, emarginate. Mandibles deflexed, of equal length with the thorax, thickly punctured, somewhat straight, the apices acuminate, curved inwards; the extreme base of each mandible furnished above and below with a strong acuminate tooth, the upper one the larger, very little punctured, slightly sloping inwards; the inner blade of the mandible armed above with a small tooth near the apex. Maxillary palpi very long, the last joint one-third longer than the penultimate. *Thoraæ* convex, one-third broader than long, not broader in front than the head, but gradually increasing in width posteriorly, the hind angles much rounded. *Elytra* three-quarters as broad as long, somewhat dull, of a coppery-brown colour, faintly tinged with purple; the sides are sub-parallel, slightly constricted below the shoulders; the whole surface is slightly uneven, very thickly and finely granulose-punctate. The *femora* and the apical half of the anterior *tibiæ* are dark, shot with æneous and purple. The anterior tibiæ are elongate, slightly curved inwards, with two strong teeth on the outside at the apex, the basal half of these tibiæ yellow; middle and posterior tibiæ yellow, except at the apex, the former much curved, furnished on the outside near the apex with a small dark tooth; the posterior tibiæ nearly straight, constricted at the base and in the middle, furnished on the outside, near the apex, with a very small dark tooth. *Tarsi* long, fuscous.

The ♀ differs from the ♂ in being relatively broader; the mandibles are short, punctate, strongly triangularly

dilated on the outside at the base; the head is formed nearly as in the ♂, but with the sides less straight, the anterior angles slightly obtuse, the punctuation is thicker; the thorax is shorter, with the sides completely rounded, the disc is smooth, and the punctuation of the impression finer, the posterior part being finely punctured; the elytra are æneous, the surface is less even; the anterior tibiæ are shorter, broad, with the base fuscous, furnished on the outside with three strong teeth, and one or two smaller ones near the base; the four posterior tibiæ are straight, shorter and stouter, the external teeth being stronger.

Hab.—Peru. ♂ and ♀, in the British Museum.

Explanation of Plate III.

Fig. 1. *Aulacostethus Archeri*; 1*a*, mentum; 1 *b*, prosternum.

2. *Chiasognathus peruvianus*, ♂.

3. „ „ , ♀.

3*a*. „ „ , side view of mandible of ♂.

V. *On Insects and Insectivorous Birds; and especially on the Relation between the Colour and the Edibility of* Lepidoptera *and their Larvæ.* By J. Jenner Weir, F.L.S.

[Read 1st March, 1869.]

During the past Summer I made several experiments, as suggested by Mr. Alfred R. Wallace, with a view to ascertain what species of Insects are eaten by Birds; and, on the contrary, what species are rejected.

Although the observations I am about to detail have only recently been made for a special object, yet my knowledge of the relations which exist in many cases between birds and insects extends over a period of more than thirty years.

The difficulty of keeping alive purely insectivorous birds in captivity is so great, that I have been obliged to restrict myself to those whose food is of a mixed character, and which thrive in confinement.

I have, therefore, relied mainly on the following species, viz.:—

The Robin, *Erithaca rubecula.*
„ Yellow-hammer, *Emberiza citrinella.*
„ Reed Bunting, *Emberiza schœniclus.*
„ Bullfinch, *Pyrrhula vulgaris.*
„ Chaffinch, *Fringilla cœlebs.*
„ Crossbill, *Loxia curvirostra.*
„ Thrush, *Turdus musicus.*
„ Tree Pipit, *Anthus arboreus.*

And in a less degree, on

The Siskin, *Carduelis spinus.*
And The Redpoll, *Linaria minor.*

Within the limits of the order *Lepidoptera,* the following results have been obtained.

The apterous female of *Orgyia antiqua* is the only Lepidopterous insect I have found to be entirely rejected in the perfect state; this I distinctly saw refused, after examination, by both the Robin and Reed Bunting, and it was quite disregarded by the other species.

The imago of *Spilosoma menthastri* was refused by the Bullfinch and Chaffinch; picked up by the Yellow-hammer, but dropped; tasted by the Reed Bunting, but not relished, and soon dropped; the latter bird, however, attracted by the fluttering insect, returned to it, and ultimately swallowed it. *Spilosoma menthastri* was also eaten by the Robin. I had been led to expect that this insect would be refused by all the birds; it was certainly not eaten with avidity, but on the contrary, after much hesitation.

All perfect *Lepidoptera* apparently require preparation before they are swallowed by birds; they are taken between the mandibles, shaken and bruised for a minute or two, and generally have the wings removed before they are eaten. This often affords a strong moth a good chance of escape, and such day-flying species as the genus *Triphœna*, which jump about in a jerking manner, and soon conceal themselves amongst the herbage, would, in a state of nature, almost always slip away from their tormentors. I have, even on the floor of my aviary, seen the struggle between the bird and the insect prolonged for several minutes. *Triphœna pronuba* is very slippery, and the flight is but little impeded by the partial destruction of the under-wings, which by their yellow colour attract the bird's attention, and are, therefore first attacked, and, perhaps, mutilated; so that the difficulty of its capture compensates for its greater liability to pursuit, owing to its diurnal habits.

Other brightly-coloured day-flying *Heterocera*, such as *Anthrocera filipendulæ*, which in no way attempts concealment, and is of sluggish habits, were unwillingly eaten, but I am by no means inclined to attach undue importance to this fact, because the birds, being in confinement, and deprived mainly of their usual insect food, might readily be expected to eat insects, which, in a state of nature, with a less limited choice, they would reject.

It is characteristic of many genera of day-flying *Lepidoptera Heterocera*, that they have brightly-coloured, and more or less ornamented under-wings, and very dull gray or brown upper-wings, quite concealing the former when at rest; these under-wings are of various colours, for instance, silvery in *Agrotis*; yellow in *Triphœna*, *Anarta*, and other genera; crimson, red, or blue in *Catocala* and *Callimorpha*.

I feel quite satisfied from actual experiment, that this distribution of colour is a great advantage to these diurnal species in the struggle for existence.

As before remarked, the bird seizes the most conspicuous part, which is very fragile; thus giving the insect another chance of escape, with a small notch only out of the under-wing. I once saw *Triphœna fimbria* in broad daylight rise to a great height, pursued by a swallow, which made several ineffectual attempts to seize it, and it certainly effected its escape; the swallow giving up the pursuit, completely baffled.

I have also seen a moth, *Macaria notata*, fly very fairly with only the two fore-wings developed, not, perhaps, quick enough to avoid such a swift bird as the swallow, but sufficiently to enable this wood-haunting species to reach a thicket in safety.

The sudden manner in which the brilliantly coloured under-wings are displayed, is another great advantage to the insect; the bird is startled, and draws back; and before it recovers its surprise, the prey escapes.

The flight of the *Triphœnæ*, and their mode of unexpectedly rising from, and quickly dropping into, the herbage, and concealing themselves, is exactly the same as that of some species of European grasshoppers belonging to the genus *Œdipoda*, which also display bright crimson or blue under-wings, combined with earthy coloured upper-wings; and I have no doubt are benefited in the same manner by a similar distribution of colours.

The results obtained with the larvæ and pupæ of *Lepidoptera* were of a more decisive and satisfactory character.

I found that all hairy caterpillars were uniformly uneaten. The species experimented with were *Arctia caja, Eriogaster lanestris, Porthesia auriflua*, and *Orgyia antiqua;* none of these species were even examined by the birds, and were permitted to crawl about the aviary for days with impunity.

I am disposed to consider that the flavour of all these larvæ is nauseous, and not that the mechanical troublesomeness of the hairs prevents their being eaten.

In order to throw some light on this point, I made an experiment with *Spilosoma menthastri*; this species in the larval state is always rejected, but being fortunate

enough to obtain about one hundred young larvæ a few hours old, having indeed only just emerged from the egg, I introduced them into the avairy on their natal leaf. The movement of the little creatures soon attracted the notice of a Siskin; the bird tasted one of the minute caterpillars, shook its beak as if it were disagreeable, and left the rest undisturbed; a Redpoll followed, but the result was the same. A West-African insectivorous Finch, *Textor erythrorhynchus*, next tried their flavour, but soon left them, evidently not liking it. No further molestation took place, and the minute larvæ remained undisturbed.

I cannot think that, in this case, the rejection arose from the hairiness of the larvæ. I imagine that it was caused by their disagreeable flavour, and that the birds were deceived into tasting them, because the characteristic warning hairs were undeveloped; and that, on the other hand, when the caterpillars are more developed, the hairs serve as a caution to the birds, that the larvæ so clothed are uneatable.

The results obtained with spined larvæ were very similar, and the deductions I make are the same. The larvæ experimented on were those of *Vanessa urticæ*, and *Vanessa Io*; these species both, as is well known, feed on the tops of *Urtica dioica*, without any attempt at concealment; the larvæ were utterly disregarded by all the birds, and were allowed to crawl about the aviary for days. The metallic looking chrysalides of the two species were also invariably rejected, thus showing that the spines were not the cause of the uneatableness of the larvæ.

Larvæ which spin webs, and are gregarious, are eaten by birds, but not with avidity; they appear very much to dislike the web sticking to their beaks, and those completely concealed in the web are left unmolested. When branches covered with the web of *Hyponomeuta evonymella* were introduced into the aviary, those larvæ only which ventured beyond the protection of the web were eaten.

The experiments I was anxious to try were those with smooth-skinned, gaily-coloured caterpillars, which never conceal themselves, but, on the contrary, appear to court observation.

My first experiment was with the larvæ of *Abraxas grossulariata;* and in order that the birds might be fairly attracted towards them, I placed them on a shelf in the aviary amongst other eatable species. I watched the birds carefully; they soon ate up all the well-relished and dull-coloured species, but left *Abraxas grossulariata* untouched. I quitted the aviary for some hours, but on my return, they were still crawling about unmolested.

The same result followed the experiments with *Diloba cæruleocephala,* and *Anthrocera filipendulæ,* both conspicuous species in the larval state.

I was most desirous to try the larvæ of the genus *Cucullia,* and at last succeeded in getting several of *Cucullia verbasci* of different sizes. These larvæ, as is well known, feed on the leaves of *Verbascum thapsus,* and are most beautifully coloured with bright blue, yellow, and black; and their skins are perfectly smooth. It appeared to me that experiments with this species would be conclusive; and I confess to feeling very excited when I made them. I had however the pleasure of finding that this crucial test did not fail. The larvæ were placed on the feeding shelf one afternoon. I found them there after dinner, and the next day some were still living, and quite unmolested.

I will now add a few words on those larvæ which are eaten greedily by birds, and my remarks on the subject will be brief; it will be unnecessary to detail all the experiments made, as the results are easily generalized.

All caterpillars whose habits are nocturnal, dull-coloured, with fleshy bodies and smooth skins, are eaten with the greatest avidity.

Every species of green caterpillar is also much relished.

All *Geometræ,* whose larvæ resemble twigs as they stand out from the plant on their anal prolegs, are invariably eaten.

To sum up, I have quite satisfied myself that insectivorous birds, as a general rule, the Cuckoo, perhaps, being an exception, refuse to eat hairy larvæ, spinous larvæ, and all those whose colours are very gay, and which rarely, or only accidentally, conceal themselves.

On the other hand, they eat with great relish, all smooth-skinned larvæ of a green or dull-brown colour, which are nearly always nocturnal in their habits, or

mimic the colour or appearance of the plant they frequent.

I propose, during the coming Summer, to continue my investigations, and shall feel grateful to any of the Members who may kindly send me living insects for experiment.

VI. *Remarks upon certain Caterpillars, &c., which are unpalatable to their enemies.* By A. G. Butler, F.L.S., &c.

[Read 1st March, 1869.]

As I understood that my friend Mr. Jenner Weir was intending to bring forward this evening the results of his experiments in regard to the insect-food of birds, I thought it might not be out of place to bring together such facts as I have myself observed, with regard to the rejection of certain larvæ and imagines by lizards, frogs, and spiders.

In the year 1863, I purchased three green lizards (*Lacerta viridis*) which I turned into a glass case, out of doors; this vivarium measured one yard square, and had been especially constructed with a view to keeping reptiles; I had so arranged the plants, and modelled the earth in this case, that the lizards might well suppose themselves to be at liberty, and I have no doubt they did so; they ate enormously, so much so indeed, that I made a note of the number of victims devoured by them between the 3rd and 13th of July, 1863, which was as follows:—"119 large flies (*Eristalis vulpinus*), numerous bluebottles, house-flies, and caterpillars (chiefly *Mamestra brassicæ* and *Phragmatobia fuliginosa*), 3 humble bees (*Bombus terrestris*), and 14 white butterflies (*Pieris brassicæ* and *rapæ*)."

Notwithstanding their eagerness for food of all kinds, from a lemon-cheesecake to a spider, there were some caterpillars, and even moths, which they would seize only to drop in disgust; amongst these, all that I especially took note of at the time, were the caterpillar of *Abraxas grossulariata*, and the imago of *Anthrocera filipendulæ*; I bred a hundred of the latter species in the year 1864, to try and establish a colony of them at South Kensington, and though I repeatedly turned crippled specimens into my lizard-house, none were ever swallowed; a lizard might spring at the insect when introduced, but after a severe pinch, which did not disable it, but disgusted its captor, it was flung away, and not again disturbed.

As with the lizards, so it was with frogs. My lizards being all dead, early in the year 1868, I turned two frogs into the case, and fed them almost daily with caterpillars, &c., from the garden; the result of my experiments with the larvæ of *Abraxas grossulariata* and *Halia vauaria* are noted in the "Entomologist's Monthly Magazine" for October last, as follows:—

When the frogs "first became aware of the introduction of the caterpillars, they seemed greatly excited, sprang forwards, and licked them eagerly into their mouths; no sooner, however, had they done so, than they seemed to become aware of the mistake that they had made, and sat with gaping mouths, rolling their tongues about, until they had got quit of the nauseous morsels, which seemed perfectly uninjured, and walked off as briskly as ever."

The same thing may be said of another insect persecutor, the spider; the rejection of these two caterpillars by my frogs, induced me to try whether spiders would show a similar aversion to them. I repeatedly put them into the webs both of the geometrical and hunting spiders (*Ereiba diadema* and *Lycosa*, species?); but in the former case, they were cut out, and allowed to drop; in the latter, after disappearing in the jaws of their captor down his dark silken funnel, they invariably re-appeared either from below, or else taking long strides up the funnel again.

Thus, in three instances, I have proved the same caterpillars to be distasteful to insect persecutors; surely such evidence may be looked upon as conclusive of the fact, that some species have an advantage over others, and, therefore, are more likely to survive in the great struggle for existence: it is well known that *Abraxas grossulariata*, *Halia vauaria*, and *Anthrocera filipendulæ* are three of the commonest of our British Moths, and here is one reason why they are so common; with regard to the two former species, it is true that the perfect insect is greedily devoured, where the larva is rejected; but when we remember that the larval state is the most subject to mortality from surrounding causes, such a fact only tends to explain how it is that these species have not become a perfect plague.

The caterpillars of *Abraxas grossulariata* were more distasteful to my lizards than were the large stinging

bees; for I have seen the latter fought with, rubbed against the ground until powerless, and, finally, devoured; this, however, generally occurred when the lizards were hungry; though I have seen a frog, sitting composedly upon a bed of stone-crop, leap up and catch the bees which flew over his head, and swallow them in utter disregard of their stings; how this is to be explained I am at a loss to say; all I know is, that such was certainly the case.

I hope that the facts I have adduced may be of some little use in supporting those which my friend Mr. Weir has observed.

VII. *Descriptions of two new Species of* Papilio *from Ecuador.* By W. C. Hewitson, F.L.S.

[Read 15th March, 1869.]

I am indebted for these two species of *Papilio* to a kind friend, Mr. James Backhouse, of York, who received them from his collector in Ecuador.

1. *Papilio Philetas.*

Male. Upperside. Dark green: the fringe with lunular white spots, broad and conspicuous on the posterior wing. Anterior wing crossed beyond the middle by a furcate band of green-yellow spots, which commences in two places near the costal margin, and uniting at the second disco-cellular nervule, is continued in five hastate spots to the anal angle. Posterior wing with a submarginal band of pale green spots, the first of which at the costal margin is linear.

Underside. Anterior wing as above, except that there are two rays of green from the base, that the spots of the band are much larger, and that the whole of the wing from the band to the apex is irrorated with green. Posterior wing with the basal half thickly irrorated with green, the nervures through it black, the outer half of the wing dark green, first marked by pale green striæ, crossed below these by a band of seven scarlet spots, with here and there between them irrorations of white; these spots are surrounded with purple, and followed by a second band of six yellow spots: the lunular spots on the margin broader than above. The abdomen white.

Female. Does not differ from the male, except in having the abdomen dark green.

Exp. $4\frac{3}{10}$ inches.

Hab.—Ecuador.

In the collection of W. C. Hewitson.

It will be seen at once that this very beautiful species belongs to that section of *Papilio* which contains *Belus* and *Crassus*.

2. *Papilio Phalœcus.*

Male. Upperside. Very dark green, apparently black out of a bright light, suffused with purple towards the outer margin of the posterior wing, the fringe with white lunules, deeply indented on the posterior wing; it has one broad tail. Both wings crossed beyond the middle by a common band of white tinted with yellow, divided by the nervures, and so thickly irrorated with black on the anterior wing, and the lower part of the posterior wing, as to appear gray; this band commences near the costal margin of the anterior wing by three spots, which form a triangle; near the fifth spot on its inner border there is a small spot of the same colour (more conspicuous in the female). Posterior wing with a submarginal band of six or seven carmine lunular spots, some of which are scarcely visible.

Underside. As above, except that the carmine spots are more distinct.

Female. Does not differ from the male, except in its greater size.

Exp. $3\frac{3}{10}$ inches.

Hab.—Ecuador.

In the collection of W. C. Hewitson.

Most nearly allied to *P. Ascanius.*

VIII. *Descriptions of six new Species of Diurnal* Lepidoptera *from Nicaragua.* By W. C. Hewitson, F.L.S.

[Read 15th March, 1869.]

The collection of butterflies recently brought to this country by Mr. Belt, from Nicaragua, contains twelve new species. The following are descriptions of six of them; belonging to the genera *Heliconia, Eresia, Eubagis, Hœtera, Mesosemia,* and *Nymphidium.*

1. *Heliconia Diotrephes.*

Upperside (except the apex of the anterior wing, which is dark brown), blue-green, the outer margins spotted with white. Anterior wing with the central half nearly white, and a spot within the cell which forms part of it, pure white, divided by very fine black nervures: a submarginal series of indistinct white spots. Posterior wing with three apical white spots.

Underside as above, except that it is dark brown: that the anterior wing has a submarginal band of rather large white spots: that the posterior wing has the costal margin (except the base, which is yellow), and two bands which cross the wing (one of which is parallel to the costal margin, and the other to the outer margin), brick-red; a linear white spot on the costal margin at the apex, the three apical spots as above, and a submarginal series of white spots in pairs.

Exp. $3\frac{1}{10}$ inches.

Hab.—Nicaragua.

In the collection of W. C. Hewitson.

This species is very nearly allied to *H. Galanthus* of Bates, but differs from it on the underside, in having a submarginal series of white spots on the anterior wing, and in having the base of the posterior wing yellow.

2. *Eresia Alsina.*

Female. Upperside. Dark brown. Anterior wing with a broad band from the base: crossed obliquely by three bands, the first of which (the longest), before the middle, is divided into four by the nervures, the second

beyond the middle divided into five, and the third near the apex trifid: besides these there is a submarginal band of five spots, all orange-yellow. Posterior wing with the costal and outer margins broadly dark brown; a submarginal band of seven orange-yellow spots.

Underside as above.

Exp. $2\frac{4}{10}$ inches.

Hab.—Nicaragua.

In the collection of W. C. Hewitson.

Most nearly allied to *E. Phillyra*.

3. *Eubagis Sosthenes*.

Male. Upperside. Glossy green. Anterior wing with the outer margin dark brown, widest at the apex and anal angle. Posterior wing with a large brown triangular spot at the anal angle, the outer margin dark brown, narrow.

Underside. Anterior wing rufous-brown, with six large white spots: three small spots of brilliant light blue, two within and one outside the cell. Posterior wing white, crossed by five rufous bands, the first near the base, the fifth submarginal and united with the fourth at both margins: two small black spots at the anal angle, one of which is marked with blue: a linear spot of blue below this.

Exp. $1\frac{6}{10}$ inch.

Hab.—Nicaragua.

In the collection of W. C. Hewitson.

This species differs little on the underside from *E. Chryseis* of Bates.

4. *Hœtera polita*.

Female. Upperside. Transparent, very glossy on both sides, the margins dark brown, narrow, the nervures brown, very fine. Anterior wing crossed by three very pale brown bands, the first short within the cell, the second before the middle crosses the cell extending to near the inner margin below the middle, the third from the costal margin beyond its middle to the anal angle. Posterior wing with a submarginal band of pale brown: a round black eye-like spot at the apex, marked by a white spot, with a similar white spot on each side of it.

Exp. $2\frac{1}{2}$ inches.

Hab.—Nicaragua.

In the collection of W. C. Hewitson.

5. *Mesosemia Asa.*

Male. Upperside. Dark brown. Anterior wing with the base, which is brilliant blue, marked by a band in the cell, a spot below it, the usual round eye-like spot (which has three white dots), and a band below this, all black. Posterior wing brilliant blue, with a broad dark brown outer margin.

Underside. Gray-brown. Each wing with the central black eye bordered with green, with three white dots on the anterior wing, and one on the posterior wing: preceded on both wings by a short band of gray and dark brown, and followed by a similar band which crosses both wings, by a broad band of dark brown, and a series of submarginal brown spots.

Female. Dark brown. Anterior wing crossed beyond the middle by a broad white band: the central black spot with a band of yellow on each side. Posterior wing marked as on the underside (but without the central spot), which does not differ from the male.

Exp. $1\frac{4}{10}$ inch.

Hab.—Nicaragua.

In the collection of W. C. Hewitson.

Near to *M. Telegone*, the underside of which is nearly the same.

6. *Nymphidium Onœum.*

Male. Upperside. Dark brown, the outer margins with the usual arched black spots, bordered with white; a large triangular space of white common to both wings; each wing with a large orange spot at the anal angle. Anterior wing with three large orange spots near the base, and a spot of white at the apex of the large triangular space of white.

Exp. $1\frac{1}{10}$ inch.

Hab.—Nicaragua.

In the collection of W. C. Hewitson.

Nearest to *N. Lysimon*, but differs from the other species in having conspicuous orange spots near the base of the anterior wing.

The other new species in Mr. Belt's collection are small, and must be left for illustration by figures.

IX. *Contributions to an Insect Fauna of the Amazon Valley* (Coleoptera, Prionides). By H. W. Bates, F.Z.S., Pres. Ent. Soc.

[Read 15th March, 1869.]

The following pages contain a description of the genera and species of Longicorn *Coleoptera*, Tribe *Prionides*, obtained by me in the region of the Amazons, and are a continuation of a series of papers commenced in the Annals and Magazine of Natural History, in July, 1861. Those papers completed the tribe *Lamiides*, leaving for subsequent publication the tribes *Prionides* and *Cerambycides*. My reasons for postponing the continuation of the work, on the completion of the first part, were the want of a general classification of the Longicorns founded on a study of the whole family, and a conviction of the inconvenience to science of partial classifications applicable only to a single fauna. Such a classification I was compelled to invent for the *Lamiides* group; which, although it seemed to suit well the material I had before me, I afterwards found impossible to reconcile with the arrangements proposed by other writers, probably equally well-suited to other faunas. This was especially the case with the classification adopted by Mr. Pascoe for the Longicorns of the Malay Archipelago, and the inconvenience to which I have alluded was felt in this way, that it was impossible, with two such distinct arrangements, to institute those comparisons which all Naturalists find so interesting, between the faunas of these two equatorial regions. The work which all Coleopterists interested in this family have been so long expecting, the eighth volume of Lacordaire's "Genera" has at length appeared, containing a new and well-considered classification of the family, and there is no longer need to delay the description of my collections. In so difficult a group it would be presumptuous to alter this classification, without a laborious study of material, as large as that which has been at the command of Professor Lacordaire; and to do so in a partial manner would hinder rather than forward the progress of our knowledge of the group; I shall, therefore, adopt it implicitly in the following descriptions, although I believe, in some points, it is far from natural in its arrangement.

According to Lacordaire, the Longicorns are divisible into three tribes; the *Lepturides*, formerly considered by most authors as a fourth tribe, being sunk to the rank of a subordinate group under the *Cerambycides*. Having traced the successive modifications of the forms allied to *Lepturides*, in the order given by Lacordaire, I have recognized the justice of this arrangement, and the error of the opinion expressed in the introduction to the *Lamiides* of the Amazons, on the same subject. The *Prionides* are distinguished from the two other tribes by the pronotum being distinct from the flanks of the prothorax, and by the anterior coxæ lying in transversely-elongated sockets. In common with the *Cerambycides*, they differ from the *Lamiides*, by the palpi never terminating in points, and the anterior tibiæ being simple instead of grooved on their inner sides.

The number of *Prionides* obtained by me from the Amazons is only twenty-six; a small proportion of the whole number found in Tropical America, namely 166. A great many, however, described from other quarters, will probably be found to be varieties or opposite sexes of other species; in confirmation of which opinion I may point to the seven false species of one genus only, *Pyrodes*, which I have reduced to synonyms in the following descriptions. But the equatorial plains seem to be less rich in the group than the borders of the tropics, or the mountainous regions. The species are mostly nocturnal in their habits, and of great rarity. When found *in situ*, it is generally on the trunks, or under the bark, of the largest forest trees. They fly abroad at night, and are sometimes overtaken by a sudden storm, and cast into lakes or rivers, whence the swell carries them to the sandy beaches; several of the species here recorded have been found under these circumstances. I have not thought it necessary to insert in the *Prionides* the sections and "tribus" of Lacordaire; the genera follow in the order of his classification.

I. Prionides aberrantes.

Genus Parandra.

Latr. Hist. Nat. des Crust. et Ins. xi. p. 252.

1. *Parandra gracillima*, n. sp.

P. elongata, angustata, mandibula dentibus molaribus basalibus contiguis, apice tridentatis, orbitu oculorum

valde elevato acuto, thorace regulariter et forte angustato ab apice usque ad basin, elytris fortiter punctatis.

Long. ♂ (mandib. incl.) 9 lin.

A distinct species remarkable for the gradual tapering of the thorax from apex to base; so that near the base it is no broader than the length. The mandibles agree in shape with the group to which *P. mandibularis* of Perty belongs, that is, they have in the ♂ a very large basal or molar tooth, the opposing teeth meeting in the centre, near the apex is an acute tooth, and the apex itself, being notched, forms two others; above, each mandible has a sharply-defined triangular depression, and the surface is rather coarsely punctured, and black. The submentum is not separated from the gula or throat by an impressed line; it is very broad, blackish, opaque, and is covered with very large and shallow circular pits, the anterior edge has not a raised border or impressed line, and the anterior angles are broad, and very obtuse. The orbit behind the eyes is very abruptly elevated, its upper edge being above the level of the eyes. The head and thorax are finely punctured, the elytra coarsely punctured, and the whole surface less shining than in the allied species.

I took one example only of this species (the only *Parandra* found on the Amazons) at Ega, under the bark of a dead tree.

The genus *Parandra* has been excluded from the family of Longicorns, by some modern authors, and restored to its place recently by Lacordaire. It may perhaps be objected to the arrangement of the latter, that he includes it in an artificial group termed "*Prionides aberrants,*" with a number of forms such as *Hypocephalus, Sceleocantha,* &c., with which it has nothing in common, except the fact of being aberrant. *Parandra* would seem rather to be an extreme development of the *Mallodon* type of *Prionides*; its chief peculiarity, namely, linear tarsi, with an onychium furnished with two bristles between the tarsal claws, being lessened in importance by the fact o a typical Prionid of the *Mallodon* group, *Hystatus,* (Thoms.), possessing a distinct onychium. I have moreover noticed that the onychium is absent, or extremely reduced and destitute of bristles, in at least one species, the North American *P. brunnea,* F. Another character of the genus, the distinct fourth joint of the tarsi,

doubtless arises from the absence of lobes in the third joint, for in all *Prionides* where these lobes are reduced in amplitude, the fourth joint is more or less visible. No importance is to be attached to the form of the ligula, this point being excessively variable in the *Prionides*.

II. Prionides veri.

Cohort 1. *Subterranei.*

Genus Psalidognathus.

G. R. Gray, in Griffith's An. King. Ins. ii. 115.

1. *Psalidognathus Incas.*

P. Incas, Thoms. Arc. Nat. p. 42.

P. Limenius, Erichs. Archiv. für Nat. 1847, i. 139, ?.

♀. Ps. cupreo-violaceus; a femina *Ps. Friendii* differt, 1° antennis articulo 3io rugoso-punctato, 2° elytris magis subtiliter vermiculato-rugosis, et magis distincte tricostatis, 3° prosterno fortiter scabroso.

One example, a female, obtained at Tabatinga, on the frontier of Brazil and Peru.

Cohort 2. *Sylvani.*

Genus Enoplocerus.

Serville, Ann. Soc. Ent. Fr. 1832, p. 146.

1. *Enoplocerus armillatus.*

Lin. Syst. Nat. ii. 622; Oliv. Ent. 66, pl. v. f. 17, ♂.

E. maximus, elongato-oblongus, brunneus, cinereo-tomentosus, elytris cinnamoneis nudis, antennis pedibusque nigris nitidis, ♂ scabrosis, ♀ lævibus.

Long. unc. ♂ 3-4¼, ♀ 3½.

I obtained three examples only of this species; on the Upper Amazons, on the trunks of dead trees.

Genus Orthomegas.

Serville, Ann. Soc. Ent. Fr. 1832, p. 149.

1. *Orthomegas cinnamoneus.*

Lin. Syst. Nat. ii. 623; Drury, Ill. i. 89. t. 40. f. 2, ♀.

O. oblongo-linearis, cinnamoneus, aureo-fulvo sericeus, lævis; thorace lateribus pone medium dente magno obliquo, antice denticulis duobus vel tribus armato.

Long. 22-30 lin. (♂, ♀).

Found occasionally, in repose on leaves in the forest, throughout the Amazons region.

Genus Macrodontia.

Serville, Ann. Soc. Ent. Fr. 1832, p. 140.

1. *Macrodontia cervicornis.*

Lin. Mus. Lud. Ulr. p. 65; Oliv. Ent. 66, pl. 2, f. 8.

M. magna, depressa, rufo nigroque varia, elytris flavo-rufis, lineis plagisque nigris variegatis.

Long. unc. 2½-4. (♂, ♀.)

A rare insect on the Amazons; on dead trees, banks of the Tapajos, and at Ega.

2. *Macrodontia crenata.*

Oliv. Ent. 66. p. 27, pl. 12. f. 45, ♀.

♂. A ♀ differt spina anteriore thoracis brevissima, et mandibulis multo longioribus. Oblonga, depressa, fusco-castanea, elytris cinnamoneis. Caput supra concavum, grosse punctatum, mandibulis capite sesqui longioribus, triquetris, cum antennarum basi (articuli reliqui desunt) nigris. Thorax transversus, quadratus, basi valde angustatus, lateribus inter spinas rectis, crenulatis, angulo antico spina minuta acuta oblique antrorsum spectante armato, spina postica majore sed brevi, angulis posticis distinctis acutis; supra creberrime punctatus, medio plaga longitudinali lineisque aliquot elevatis nitidis, sparsim punctatis. Elytra marginibus pone humeros valde explanatis, margine foliaceo usque ad apicem extenso sed sensim

angustato, apice late rotundato, angulo suturali spinoso; supra opaca, subtiliter alutacea, cinnamonea, absque lineis elevatis. Corpus subtus nitidum, impunctatum, castaneum. Pedes nigro-castanei, nitidi.

Long. ♂ (mandib. incl.) 28 lin.

I am not aware that the male of this very rare species has been heretofore described. It differs greatly from the female in the punctuation of the thorax, and in the size of the antero-lateral spine. A similar sexual difference exists in *M. flavipennis* (Chevrolat), the female of which is named *serridens* in Chevrolat's collection, and in *M. Dejeanii* (Gory); the male in all these species having a finely punctured opaque thorax, with a glossy space in the middle, and the female being uniformly scabrous-punctate, slightly shining.

I met with one example only of *M. crenata* on the Amazons, near Ega.

Genus Titanus.

Serv. Ann. Soc. Ent. Fr. 1832, p. 133.

1. *Titanus giganteus.*

Linn. Mant. p. 531; Drury, Ill. iii. p. 73, pl. 49. f. 1, ♀.

T. (♂, ♀) fusco-castaneus, thorace lateribus trispinosis, supra punctato-rugoso, medio late impunctato, tibiis ♂ intus multispinosis, ♀ lævibus, antennis utroque sexu dimidium corporis haud excedentibus, segmento ultimo ventrali ♂ in medio late exciso, ♀ integro.

Long. 4½-6 unc.

In addition to the sexual differences mentioned in this short diagnosis, may be mentioned the much greater width of the tarsi in the ♂ than in the ♀. The tarsi of the ♂ are of remarkable width, and the second joint is transverse quadrangular, instead of triangular as in the ♀ and in Longicorns generally. On the Amazons this colossal Longicorn was found only near Manaos, on the Rio Negro; where it is occasionally picked up on the shores of the river after a stormy night, the insect being cast into the water whilst flying across.*

* In the system of Lacordaire the group *Ancistrotides* follows the *Titanides*, but in a note on a subsequent page (Genera, viii. p. 163) he justly doubts whether they would not be better placed near the group *Tragosomides*. The following new species of *Acanthinodera* (group *Ancistrotides*) tends in favour of this emendation.

Genus Ctenoscelis.

Serv. Ann. Soc. Ent. Fr. 1832, p. 134.

1. *Ctenoscelis ater.*

Oliv. Ent. 66, p. 11, pl. 7, f. 24, ♂.

Ct. piceo-niger, tarsis posticis lobis angustissimis et longe spinosis; elytris apice apud suturam sinuatis, angulo suturali spinoso.

Long. 3½-3¾ unc. (♂. ♀).

♂. Thorax minutissime et creberrime punctatus, disco utrinque plagis angustis tribus grosse scabrosis nitidis; antennæ longitudine corporis, intus denticulatæ; tarsi lobis intermediis et posticis spinosis.

♀. Thorax omnino grosse scabrosus; antennæ dimidium corporis attingentes, punctatæ; tarsi lobis omnibus spinosis.

I obtained many specimens of this fine species at Ega, on the Upper Amazons, on the trunks of large felled trees.

2. *Ctenoscelis Dyrrhacus.*

Buquet, Ann. Soc. Ent. Fr. 1843, p. 235, pl. 9, fig. 1, ♂.

Ct. piceo-niger, tarsorum lobis ovatis, haud spinosis; thorace utroque sexu scabroso, medio lævi, nitido; antennis articulo basali breviori et validiori; elytris apice nec sinuatis nec dentatis.

Long. 3 unc. 4 lin.—4 unc. 4 lin. (♂ ♀); lat. elytr. (♂) 18 lin.

Acanthinodera bihamata, n. sp.

♂. Oblonga, depressa, rufo-castanea, tibiis tarsisque flavo-castaneis, capite, thorace, scutello et pectore quam *A. Cumingii*, ♂, minus dense flavo-lanuginosis, puncturis grossis capitis thoracisque patentibus. Antennæ robustæ, leviter serratæ, corpore paulo longiores, articulis subæqualibus, primo punctato, reliquis lævibus. Thorax transversus, lateribus utrinque antice valde bihamatis. Elytra oblongo-quadrata, depressa, marginibus explanatis, apice sub-truncata, angulo suturali spinoso, supra subtiliter alutacea et elevato-reticulata costis quatuor vix perspicuis. Pedes elongati, graciles, valde compressi, sparsim hirsuti; tarsis elongatis, linearibus, articuli tertii lobis angustissimis acutis.

Long. 11 lin.

Hab.—Mendoza. A Dom. Ed. Steinheil recepta.

♂. Antennæ longitudine corporis, articulis basalibus tribus aspere punctatis, omnibus intus denticulatis; tarsi omnes lati, lobis rotundatis.

♀. Antennæ dimidium corporis attingentes, tenuiter punctatæ, nec denticulatæ; tarsi lobis compressis.

The thorax is coarsely scabrous on the sides in both sexes, and has a broad shining space in the middle, finely punctured; the basal joint of the antennæ is shorter and thicker than in any other known species. The female has not before been described.

The species occurred at Santarem, Obydos and Manaos, on the Amazons.

3. *Ctenoscelis Nausithous.*

Buquet, Ann. Soc. Ent. Fr. 1843, p. 236, pl. 9, f. 2, ♂.

Ct. gracilior, thorace angustior; piceo-niger, thorace scabroso, spatio mediano lævi subtiliter punctato; elytris apice rotundatis, angulis suturalibus dentatis.

Long. 3 unc. 4 lin.

♂. Antennæ corpore longiores, articulis extus breviter tuberculatis, tribus basalibus subtiliter punctatis, reliquis lævibus.

♀. Antennæ dimidium corporis superantes, sparsim punctatæ; tarsi lati, lobis posticis acutis.

The shape of this species is much more slender than in the rest of the genus; the thorax of the female is scarcely to be distinguished from that of the same sex in *Ct. Dyrrhacus*, but the elytra differ in being much narrower, and especially more parallel-sided; the tibiæ also are relatively longer, and more slender.

I met with one example only of this species, a female, at Serpa, near the mouth of the River Madeira. Not being acquainted with the male, I have drawn up the above imperfect diagnosis from the description of M. Buquet, who obtained the insect from Bolivia.

Lacordaire founds his generic characters of *Ctenoscelis*, in great measure, on the sexual differences in the punctuation of the thorax, as shown in *Ct. ater* and *acanthopus;* this part of his diagnosis will no longer be applicable, as *Ct. Dyrrhacus* and *Nausithous* show no such differences.

Genus Ialyssus.

J. Thomson, Syst. Ceramb. p. 296.

1. *Ialyssus tuberculatus.*

Oliv. Ent. 66, p. 20, pl. 6, f. 22.

I. oblongus, fusco-castaneus, elytris (basi scabrosa excepta) rufo-ochraceis, lævibus, opacis, angulis suturalibus spinosis; antennarum articulis primo et tertio longitudine æqualibus.

♂. Thorax subtiliter creberrime punctato-rugosus, opacus, disco utrinque plaga triangulari lineisque duabus, et basi linea transversali, elevato-scabrosis, nitidis.

♀. Thorax omnino scabrosus.

Long. 2 unc. 4 lin.

I found one example only, a male, of this rare species; at Ega, washed up on a sandy beach, after a storm, on the river Teffé.

Genus Mallodonhoplus.

J. Thomson, Classif. des Ceramb. p. 320; Lacord. Genera, viii. p. 117.

Distinguished from the genus *Mallodon* by the femora and tibiæ, at least of the anterior legs, being armed with rows of short denticulations, and by the scabrous punctuation of the thorax. The portion of Lacordaire's definition relating to the mandibles, will have to be modified, to include the following species, which is undoubtedly congeneric with the type species, *M. nobilis.*

1. *Mallodonhoplus crassidens,* n. sp.

M. oblongus, paullulum convexus, piceo-niger, capite grossissimé punctato, labro antice ligulâque fulvo-hirsutis, mandibulis capite brevioribus (♂) extus à basi valde rotundato-dilatatis vel tumidis, apice acutissimis, supra scabrosis, intus concavis vix hirsutis et margine interiori medio dilatato quadridentato; antennis dimidium corporis superantibus,

articulo primo grosse punctato; thorace quadrato, supra scabroso, in medio elevationibus indistinctis duabus lævioribus; elytris vix nitidis, passim crebre minus profunde punctatis, angulis suturalibus spinosis; sternis omnibus grosse punctatis, pedibus anticis denticulatis, tarsis piceo-rufis; ventris segmentis singulis valde convexis.

Long. ♂ (mand. incl.) 2 unc. 4 lin.

Very similar in shape and sculpture to *M. nobilis*, Thoms., from Venezuela, the thorax being almost exactly of the same outline and surface; it differs in being entirely black, in the absence of fulvous hairs from the epistome, and in the great thickness of the mandibles. These organs are much shorter than the head, and are abruptly dilated externally, the apex of each ending in a long acute point, and the inner edge about the middle being advanced, and armed with four short broad teeth, nearly as in *Mallodon spinibarbis*. The elytra have a marked convexity from base to apex.

I met with only one example of this species, at Ega, cast up on a sandy beach, after a storm.

Genus Mallodon.

Serville; Lacord. Genera, viii. p. 125.

1. *Mallodon spinibarbis*.

Lin. Mus. Lud. Ulr. p. 67.

M. piceo-niger, elytris castaneis, vel omnino fusco-niger, capite grosse punctato, genis sub mandibulis prolongatis acutis; thorace plagis politis septem, interstitiis in ♂ subtiliter crebre punctatis, in ♀ scabrosis; elytris subtilissime sparsim punctatis; processu prosternali plano, ♂ crebre punctato, ♀ glabro.

A widely-distributed insect, found sometimes in great numbers, under the loose bark of felled trees; it is very unstable in the outline of the thorax in both sexes, but it may always be distinguished from the nearest allied species by the angles of the cheeks below the mandibles forming a simple point, instead of being bifid. I have specimens from Mexico, Cayenne, and Rio Janeiro, as well as from the Amazons.

2. *Mallodon bajulus.*

M. bajulus, Erichs. Consp. Ins. Col. Peru. p. 138.

M. occipitale, Thomson, Physis, I. p. 93, ?.

♀. "Oblongus, depressus, fusco-niger, nitidus, genarum processu bidentato: prothoracis disco polito, medio serie punctorum obsoletorum longitudinali notato, lateribus punctato-rugosis, margine obtuse crenulato, angulis posterioribus denticulo acutiusculo terminatis, elytris punctulatis. Long. 1″ 5‴." (Erichs.).

♂. Mandibulis brevibus, suprà et infra grosse punctatis; capite grosse confluenter punctato; thorace plagis septem elevatis politis, omnibus (exteriori utrinque excepta) basi conjunctis, interstitiis crebre grossius punctatis; elytris distincte punctatis; processu prosternali convexo, vix punctato.

Hab.—St. Paulo, Amazons.

I think it extremely probable that *M. occipitale,* Thoms., from Venezuela, belongs to the same species: specimens before me referable to this species differ only in the finer punctuation of the elytra. *Mallodon bajulus,* of Erichson, has been generally cited as the ♀ of *Chiasmetes Limœ* of Guérin, but Erichson's diagnosis lends no support to such an inference; the terms "depressus—genarum processu bidentato" being quite inapplicable to *Chiasmetes;* on the contrary, they fit the present species of *Mallodon* which I found in the same tract of country where Erichson's insect was discovered by the traveller Tschudi. M. Thomson makes no mention, in his monograph of *Mallodon,* of the form of the anterior angles of the cheeks, without which it is scarcely possible to give satisfactory descriptions of the species.

Genus Stictosomus.

Serville; Lacord. Genera, viii. p. 144.

A remarkable genus, distinguished by its oblong-linear depressed form, long acute mandibles curving downwards

and a little backwards towards the apex, and by the extremely long claw-joint of the tarsi; the third joint of the antennæ is nearly as long as the four following taken together, and is thickened and cylindrical.

1. *Stictosomus semicostatus.*

Serv. Ann. Soc. Ent. Fr. 1832, p. 153.

St. oblongus depressus, niger, passim grosse punctatus, elytris costis quatuor distinctis.

Long. 1 unc. 10 lin. ♂.

One example, found near Montes Aureos, in the interior, East of Pará.

Genus Polyoza.

Serville; Lacord. Genera, viii. p. 152.

1. *Polyoza lineata,* n. sp.

P. oblongo-linearis, rufo-fulva, elytris utrinque suturâ et carinis quatuor elevatis, interstitiis nigris: antennis (♂) dimidium corporis vix superantibus, articulis 3—8 basi laminas elongatas emittentibus.

Long. 11 lin. (♂).

Resembles in form *P. Lacordairei;* the head, palpi, mandibles, and eyes offer scarcely any difference: the thorax has on each side three teeth, the foremost one very small, and the hindmost pointing towards the shoulders of the elytra; its surface is sculptured in a raised reticulate pattern. The elytra offer a raised suture and four carinæ, the interstices of which are of a dark colour, the whole surface is finely rugose-punctate, and the sutural angle acute, but not spinose. The antennæ are very much shorter than in *P. Lacordairei,* and the long foliaceous appendages to the joints placed more closely together. The underface and legs are finely punctate-granulate and hairy, and of a paler hue.

One example, taken in a dead tree at Ega.

Cohort 3. *Pœcilosomi.*

Genus Mallaspis.

Serville, Ann. Soc. Ent. Fr. 1832, p. 188.

The characters of this genus, in Lacordaire's "Genera," derived from the antennæ, especially those of the ♀, are no longer applicable, since species have lately been discovered * which differ from the types in this respect. In fact, there is now no character to distinguish the genus from *Pyrodes*, except the pilose scutellum.

* These are as follows.

Mallaspis Beltii, n. sp.

Species distinctissima, antennis in utroque sexu articulis linearibus, colore ♀ a ♂ valde diverso; mesosterno et metasterno sutura distincte divisis.

♂ Long. 18-20 lin.

Oblonga, convexa, postice attenuata, æneo-castanea, capite thoraceque æneo-fuscis, antennis tibiis et tarsis rufo-castaneis. Caput magnum, elongatissimum, subremote modice punctatum, lateribus parallelis, fronte, late sulcata. Thorax pone medium valde dentatus, antice in linea subrectus, angustatus, minute irregulariter denticulatus, pone dentem sinuatus, angulis posticis nullis, supra æqualis, modice crebre punctatus, subnitidus, lateribus rugulosis. Elytra parte basali convexa, postice declivia, apice oblique truncata, angulo suturali prominenti acuto, humeris antice protrusis, supra prope basin vermiculato-punctata, postice subtiliter punctato-coriacea. Corpus subtus æneum, griseo-tomentosum; pedes rufo-castanei, femoribus obscurioribus. Antennæ corpore paulo longiores, rufæ, articulis a 3° omnibus linearibus, 3° paullo latiori sed lineari, ultimis duobus basi intus spinosis. Scutellum aureo-tomentosum.

♀ 15 lin. Forma ♂ similis; postice minus angustatus, capite breviori; thorace et elytris basi fortiter rugoso-punctatis, colore omnino saturate-æneo vel obscure-cyaneo, antennis pedibusque cyaneis; corpore subtus glabro. Antennæ corporis dimidio longitudine æquales, articulis linearibus, cyaneis. Processus prosterni canaliculatus.

Hab.—Chontales, Nicaragua. Dom. Belt invenit.

Mallaspis Salvini, n. sp.

M. Beltii proxime affinis; eadem differentia sexuum formaque prothoracis et antennarum.

♂ Long. 15-16 lin. Oblonga, depressa, postice attenuata, supra tota læte ænea, subtus aureo-refulgens. Caput thorax et elytra ut in *M. Beltii*, sed illud grossius punctatum nitidum, hæc prope apices minus attenuata, obtusius rotundata. Antennæ corpore longiores, articulis duobus ultimis basi tuberculatis, rufæ. Pedes rufi, femoribus æneo-tinctis.

♀ 15 lin. *M. Beltii* ♀ forma et colore simillima; caput multo grossius rugoso-punctatum; antennæ omnino violaceæ; processus prosterni haud canaliculatus.

Hab.—Costa Rica. A Dom. Salvin receptus.

1. *Mallaspis scutellaris.*

Oliv. Ent. 66, p. 14, pl. 2, a. b.

M. obscure ænea, elytris basi excepta cinnamoneis, thorace lateribus antice rotundatis et multidenticulatis, antennis articulis 4-7 basi et apice 8-11 totis rufis, ♂ corpore multo longioribus articulis compressis denticulatis, ♀ brevioribus articulis dilato-compressis.

Extremely rare; found only at Nauta, on the Upper Amazons.

Genus Pyrodes.

Serville; Lacord. Genera, viii. p. 177.

1. *Pyrodes pulcherrimus.*

P. pulcherrimus, Perty, Del. An. Art. Bras. p. 86, t. 17, f. 4, ♀.

P. fastuosus, Erichs. Consp. Ins. Col. Peru. p. 139, ♀.

P. heterocerus, Erichs. Consp. Ins. Col. Peru. p. 139, ♂.

P. antennatus, White, Cat. Long. Brit. Mus. p. 51, pl. 2, f. 6, ♂; Lucas, Voy. de Castelnau, Ins. pl. 10, f. 8, ♂.

P. petalocerus, White, Cat. Long. Brit. Mus. p. 50, ♂.

♂. Medio valde convexus, colore variabilis, fusco-ferrugineus vel æneo-fuscus, vel antice ferrugineo-cupreus, postice ferrugineus; scutello apice prolongato; antennis articulo tertio magno lato compresso, azureo, reliquis rufis; capite thorace et scutello crebre æqualiter punctatis; elytris vermiculato-coriaceis; femoribus cyaneis.

♀. Azureus vel cyaneus, elytris rugulosis nitidis, fascia lata ante medium flavescenti-alba; antennis cyaneis, articulo tertio simplici lineari. Variat thorace maculis duabus rufis.

This beautiful and singular species was not infrequent at Ega. The two sexes, as here described, have always been considered distinct species; but the fact that all of one form are males, and all of the other females, and that they are invariably found together, on the trunks of trees, induces me to consider them as pairs, although I never ound them *in copulâ*.

2. *Pyrodes Smithianus.*

White, Proc. Zool. Soc. 1850, p. 12.

P. pulcherrimo (♀) formâ similis, thorace latiori, lateribus antice rotundato-dilatatis. Cupreo-æneus, elytris aureo-viridescentibus; antennis brevibus tenuibus; thorace elytris latiori, cum capite et scutello crebre distincte punctatis; scutello elongato; elytris sutura et costis duabus utrinque elevatis, crebre rugosis.

Long. 15 lin. (♀).

I found one specimen of this species on the foliage of a low tree, at Caripi, near Pará. Unfortunately it was not reserved for my private collection, and I have drawn up the above diagnosis from the type specimen in the British Museum, which was found by Mr. J. P. G. Smith, also at Caripi.

3. *Pyrodes formosus,* n. sp.

P. pulcherrimo (♀) formâ simillimus, colore omnino læte saturato-cæruleus, plagis duabus elytrorum violaceis exceptis; caput thorax et scutellum subopaci, confertim punctati; antennæ ut in *P. pulcherrimo* (♀) lineares, vel prope apicem incrassatæ, cyaneæ; elytra fortiter, prope apices vix minus forte, vermiculato-rugulosa, angulis suturalibus haud productis, nitida; corpus subtus, et pedes, saturate cærulei.

Long. 15-18 lin. ♀.

Two female examples only of this beautiful species were found, near St. Paulo, Upper Amazons. In the British Museum there is a specimen from Cuenca, Equador, entirely of a beautiful greenish-blue colour, and rather more coarsely sculptured.

4. *Pyrodes gratiosus,* n. sp.

P. bifasciato, Linn., affinis, minor, colore ♀ valde diverso, et antennis distincte 11-articulatis.

♂. Oblongus, læte æneo-viridis, nitidissimus, elytris testaceo-translucentibus. Caput et mandibula sparsim punctata, illo antice aureo, sulco frontali fundo lævi. Thorax quadratus, lateribus denticulatis,

medio fortiter dentatis, angulis posticis dentiformibus, suprà grosse punctatus, disco impressione magna triloba. Scutellum læve. Elytra oblongo-quadrata, tertia parte basali grosse punctato-rugosa, dein subito crebre subtiliter rugosa ; viridi-ænea, basi et medio testaceo translucentia. Corpus subtus glaberrimum, prosterno gibbo, lævi. Antennæ corpore paulo longiores, robustæ, filiformes, nigræ, articulis 4 basalibus cupreis. Pedes rufi, geniculis fuscis.

Long. 6 lin.

♀. Oblongus, saturate cyaneus, capite thoraceque grossius punctatis, vix nitidis, elytris basi tantum micantibus, miniato-rubris, fascia sub-basali curvata purpureo-nigra. Sulcus frontalis fundo lævis. Thorax ut in ♂ quadratus, lateribus medio dente forte armatis, angulis posticis dentiformibus, punctatus scabrosus, medio impressione magna triloba. Scutellum grosse punctatum, opacum. Elytra oblonga, basi convexa, prope basin fortiter punctato-rugosa, dein subito subtiliter rugosa. Antennæ corpore paulo breviores, minus robustæ, filiformes, cyaneæ, basi cupreo-violaceæ, articulis 3-7 supra sulcatis. Corpus subtus cyaneum, nitidissimum. Pedes cyanei, geniculis et tibiis apice violaceis, tarsis rufis.

Long. 10-12 lin.

This beautiful species is readily distinguished in the female from *P. bifasciatus* by the elytra having only one dark fascia, and that near the base, commencing below the shoulder, and curving towards the suture, which it does not reach ; the rest of the elytral surface is of a clear red-lead colour, or dark vermillion, almost opaque, except near the base, where it has a metallic lustre. The slender 11-jointed antennæ distinguish it at once from the female of *P. nigricornis*, Guér., besides the colour. I obtained three female specimens of precisely similar colours, two of which are in my own collection. The males of these closely-allied species are less easily to be distinguished ; I obtained only one example with the three females ; but have seen a second, similar in size, in Mr. Fry's collection, also from Pará. The antennæ are notably more slender than in the ♂ of *P. nigricornis*, and the terminal joint is much less elongate, being very little longer than the penultimate, whilst it is half as long

again in *P. nigricornis*. The species seems peculiar to the neighbourhood of Pará. *P. bifasciatus* is found at Surinam and Demerara, and all the female specimens I have examined have the two terminal joints of the antennæ blended into one elongate joint, with a trace of the articulation.

5. *Pyrodes nodicornis*, n. sp.

♀. *P. bifasciato* simillimus, gracilior, antennis 10-articulatis, thoracis angulis posticis haud prominentibus. Oblongus, nigro-cyaneus, supra vix nitidus, subtus politissimus. Caput et thorax grosse crebre punctati, hoc quadrato angusto, in medio paulo dilatato et valde dentato, angulis posticis haud prominentibus, supra impressione profunda triloba. Elytra postice haud attenuata, medio vix rotundata, supra præcipue versus basin et suturam grosse rugoso-punctata, læte miniata, fascia lata communi prope basin (margines haud attingente) alteraque apicali (cum precedente vitta lata suturali conjuncta) cyaneo-violaceis. Pedes cyanei, violaceo-micantes. Antennæ corpore paulo breviores, graciles, articulo decimo precedentibus latiori, colore cupreo-violaceæ, articulo tertio haud sulcato.

Long. 11 lin., lat. 5 lin. ♀.

One example, taken at St. Paulo, Amazons. Very similar in form and colour to *P. bifasciatus ;* differs in the tenth antennal joint being short and ovate, without trace of constriction in the middle, and also in the absence of projecting hind angles to the thorax.

6. *Pyrodes nigricornis*.

P. nigricornis, Guérin, Verhandl. zool.-bot. Verein zu Wien, 1855, p. 598, ♂.

P. rubrozonatus, Lucas, Voy. de Castelnau, Entom. p. 180, pl. xi. f. 2 (1857) ♂.

♂. Breviter oblongus, variat vel fulvo-testaceus æneo tinctus, antennis (basi excepta) violaceo-nigris, vel aureo-viridis splendens, elytris semifascia rufa, vel cupreo-violaceus, fascia elytrali integra, vel

pallidus, pedibus rufis, vel ut ante coloratus, pedibus rufis femoribus tibiisque posticis plus minusve violaceo-metallicis. *P. gratioso* differt antennis magis robustis, articulis brevioribus, elytris grossius punctato-scabrosis, thoracis angulis posticis dentiformibus. Latitudo thoracis variat.

Long. 8 lin. ♂.

♀. Breviter oblongus, cyaneus, elytris violaceis, basi splendide cupreis, pone medium fascia interrupta rufa; thoracis angulis posticis dentiformibus; antennis robustis, corpore multo brevioribus, 11-articulatis, articulo tertio haud sulcato : tarsis rufis.

I took many specimens of this species at St. Paulo, Amazons, on the leaves of trees in the forest. One pair were taken *in copulâ*. I have examined Guérin's type of *P. nigricornis*, and found it to agree with the palest of my specimens. It was probably taken in the same locality as mine, by Osculati, who spent some time at the village of St. Paulo on his voyage down the Amazons.

7. *Pyrodes dispar*, n. sp.

P. precedentibus affinis, differt pedibus grosse et profunde punctatis.

♂. Oblongus, læte viridi-æneus; thorace inæquali, grosse punctato, scabroso, lateribus medio spinosis, angulis posticis dentiformibus. Elytra passim crebre et grossius punctato-scabrosa. Pedes rufi, grosse et profunde punctati, femoribus tibiisque posticis cyaneis. Antennæ corpore breviores, robustæ, filiformes, cupreæ, articulo ultimo cum precedente quasi concreto.

Long. 8 lin.

♀. Breviter oblongus, affinibus multo latior; violaceus, supra passim crebre rugosus, sulci frontalis fundo haud lævi, thoracis disco haud foveato, angulis posticis dentiformibus. Elytra plaga basali, altera laterali pone medium, et margine exteriori inter has, rubro-cupreis. Corpus subtus cupreo-nitidum, abdomine crebre punctato, pedibus cyaneis, grosse et profunde punctatis. Antennæ dimidium corporis vix excedentes, cyaneæ, 10-articulatæ, articulo tertio haud sulcato, decimo precedente latiori et duplo longiori.

The nearly coalescent two terminal joints of the antennæ will distinguish the male of this from the three preceding species, as well as the much more deeply and roughly punctured femora and tibiæ; the other characters, and the colour, I think, may be more variable. The female is distinguished from all by its great width of body, and coarsely punctured femora and tibiæ. It differs greatly from *P. nodicornis* in general form of body, and in the prominent dentiform hind angles of the thorax. The two terminal joints of the antennæ are blended into one in both species, without trace of separation, but the joint thus formed is short and ovate in *P. nodicornis*, and very elongate in *P. dispar*.

I have seen one pair only of this species, taken by Mr. J. Hauxwell, at Pebas, on the Amazons.

In this group of *Pyrodes*, the scutellum seems to afford no reliable specific characters, as it varies in shape and sculpture in specimens undoubtedly belonging to the same species; the form is nearly as in the common *P. speciosus*, but its apex is more prolonged. In all the species where the hind angles of the thorax are produced, the lower margin is also dentiform, giving an appearance of two teeth at the angle, one above the other. The margin of the thorax anterior to the lateral spine, in all the species, is irregularly and variably denticulate. The general form and colours of the *bifasciatus* group are so variable, that if future discoveries prove the terminal joints of the antennæ to be variable, the whole will constitute one variable species, remarkable for its inconstancy in structural characters.*

* The genus *Pyrodes*, after withdrawing *P. pictus* (Perty) which having the sides of the scutellum pubescent is better placed in *Mallaspis*, and *P. columbinus* (Guér.) which belongs to the genus *Esmeralda*, contains the following species: 1. *P. pulcherrimus* (ut supra). 2. *P. formosus*. 3. *P. tenuicornis*, White, ♂ (♀ = *marginatus*, White, Catal. p. 49, ♂ = *angusticollis*, Lucas, Voy. de Casteln., p. 179, pl. 11. f. 1; the description leaves no doubt whatever of this synonym, and the locality given by Lucas must be erroneous). 4. *P. Smithianus*, White. 5. *P. speciosus*, Oliv. 6. *P. æneus*, Buq., Ann. Soc. Ent. Fr. 1860, p. 618. 7. *P. bifasciatus*, L., Oliv. 8. *P. nigricornis*, Guér. (*rubrozonatus*, Lucas). 9. *P. gratiosus*. 10. *P. nodicornis*. 11. *P. dispar*. There remains only one undescribed species in all the extensive collections of Longicorns which I have examined in London; this is a fine one from New Granada, represented by a single female example, in Mr. Fry's possession, derived from the Dejean-Laferté Collection.

Genus Esmeralda.

J. Thomson, Classif. des Ceramb. p. 303 ; Lacord. Genera, viii. p. 178.

Distinguished from *Pyrodes* by the great width and length of the scutellum, which, in the male, is nearly half the length of the elytra; and by the metasternum being greatly advanced between the middle coxæ, and nearly hiding the grooved mesosternum, which lies obliquely on its anterior face; the prosternum is also of great width, and its point does not interlock with the mesosternum. The antennæ in the ♂ are very robust, compressed, and subserrate; the tibiæ also are compressed into thin blades in both sexes, and the tarsi are excessively short.

The only species of this charming group hitherto described is *E. suavis*, Thoms. But I have no doubt whatever of this being the ♂ of *Pyrodes columbinus*, of Guérin (said by White, erroneously as I think,* to be the *Cerambyx auratus* of Linnæus). I captured the male and female of the following species together, but not *in copulâ*, on the trunk of a slender tree, and as the differences between them are not at all greater than in many species of *Pyrodes*, the conclusion that they are sexes of one and the same species is not to be resisted.

1. *Esmeralda lætifica*, n. sp.

♂. Oblonga, depressa, viridi-ænea, nitidissima, capite antice et infra thoraceque toto testaceo-rufis aureo-tinctis, femoribus 4 anticis et processu metasternali rufis, elytris violaceis, subtilissime rugoso-punctatis, bicostatis, triente basali excepta sparsim punctatis.

Long. 6 lin.

♀. Late oblonga, subdepressa, læte cyanea, scutello et corpore subtus violaceis.

Long. 9½ lin.

Differs from *E. columbina*, Guér. (♂, *suavis*, Thoms.) in both sexes, by the basal third of the elytra being glossy, and marked with very few punctures; the scutellum has a few very fine punctures on each side. The

* The phrase of Linnæus "elytra rubro-viridi-aurata" is not at all applicable to any specimen of *E. columbina* which I have seen.

thorax in the ♂ has its lateral margins free from crenulations, and is of a tawny-orange colour above and beneath, except a narrow mark on the hind margin on each side; above, it has a few strong punctures on the sides, and in the deep central fovea. In the ♀ the thorax is crenulate on the sides, and has numerous large punctures on the sides and in the central fovea, most of the elevated portions being impunctate. The posterior part of the elytra, in both sexes, is rendered rough and opaque by the extreme closeness and minuteness of its punctuation. In the ♂, the middle coxæ, the greater part of the anterior and middle femora, and the broad metasternal process, are fulvous-red.

I met with one pair only of this species, on the trunk of a slender tree, in a small clearing in the forest, near St. Paulo, on the Amazons. They were actively moving about in the heat of the mid-day sun.

The following genus seems to be a degraded form of the *Pyrodes* type, wanting the grooved mesosternum, the sulcate head, and many other minor characters of the group. Its projecting metasternum indicates a nearer affinity with *Esmeralda* than with the *Pœcilosominæ*, in which group it is placed by Lacordaire. No other member of the *Pœcilosominæ* or *Solenopterinæ* is found on the Amazons.*

* The following very interesting species has recently been discovered by Mr. Belt at Chontales, Nicaragua; it connects the two North-American genera *Holonotus* and *Sphenostethus*.

Holonotus nigroæneus, n. sp.

Elongatus, convexus, scaphiformis, *Sphenostetho serripenni* similis, sed scutello haud elongato, aterrimus nitidus, supra præcipue elytris æneotinctus. Caput parvum, supra late sulcatum, grosse sparsim punctatum. Antennæ (♀) dimidio corporis breviores, articulis valde compressis latis, vix punctatis. Thorax a basi usque ad apicem attenuatus et declivis, marginibus lateralibus integris, disco sparsim subtiliter, lateribus grosse et rugose punctatus, margine postico elytris angustiore, utrinque sinuato, lobo mediano truncato. Scutellum latum, triangulare, apice depressum, læve. Elytra a basi usque ad apices regulariter attenuata, humeris obliquis rotundatis, apicibus rotundato-truncatis serratis; supra coriacea, subnitida, passim modice punctata. Subtus glaber, pectoris lateribus punctatis, vix pilosis; mesosternum crassum, apicem prosterni incumbens. Pedes nigerrimi, nitidi, tarsis brevibus, latis.

Long. 1 unc. 2 lin., lat. 5 lin. ♀.

Hab.—Chontales, Nicaragua; in Mus. nostr.

Genus Nicias.

Nicias, J. Thomson, Arch. Entom. i. p. 136.

Hamadryades, Thomson, *lib. cit.* p. 22 (*olim*).

1. *Nicias alurnoïdes.*

J. Thomson, Arch. Ent. i. p. 23, pl. 9, f. 3.

N. niger, nitidus, elytris stramineis, quarta parte apicali maculaque utrinque mediana transversa nigris; abdomine rufo-testaceo.

Long. 7 lin. ♀.

I found two examples of this pretty and singular Prionid, on different days, on the foliage of trees at Ega; one of them is now in my own collection, the other I believe was sent to Paris. The beautiful figures of M. Thomson render further description unnecessary.

X. *Synopsis of the Species of* Panorpa *occurring in Europe and the adjoining Countries; with a Description of a singular new Species from Java.* By R. McLachlan, F.L.S., Sec. Ent. Soc.

[Read 15th March, 1869.]

In this paper I have attempted to give a synopsis of the European species of *Panorpa*, with comparative diagnoses in a tabular form, and remarks. I enumerate twelve species, whereof two are insufficiently known, and five are new, two of the latter coming from Mingrelia, a country which, though politically forming part of Europe, is more decidedly Asiatic.

Owing to the similarity of markings, much confusion has existed; but the decided characters exhibited in the abdomen of the male, especially in the four terminal segments, separate the species very readily; the form of the two narrow appendices lying on the face of the claw-bearing terminal segment is also a means of differentiating closely allied forms; and the parts under these appendices would, no doubt, well repay attentive study, in the living insect. The markings in the wings furnish less important characters; for though each species has a certain typical arrangement of the markings, the deviations are so many, and frequent, that reliance cannot be placed on it alone. The neuration is probably still more given to vary, especially in the number of the furcations; but the comparative length of the sub-costal vein divides the species into two groups. The number of teeth in the claws of the tarsi is not noticed in this paper, because, in dry specimens, one or more of the teeth are frequently hidden by the large spongy pulvillus, and hence this character is a dangerous one on which to ground specific distinctions.

In the citations of authors, only the most important are noticed; and I have omitted Klug's monograph altogether, because all the European species are grouped therein under *P. communis*, and no indication given of the male abdominal characters; in Westwood's monograph the same omission occurs for the European forms; but at the time these two works were published, these all-important characters were little understood. In Walker's British Museum Catalogue several species are confounded under *P. germanica* and *communis*.

The plate accompanying this synopsis gives figures of each species, with the most general arrangement of the markings, and also enlarged outlines of the terminal segments of the male abdomen and appendices.

In conclusion, I express my thanks to Baron de Selys Longchamps, and Chevalier Victor Ghiliani, for their liberal gift and loan of examples, without which aid this work could not have been attempted.

Genus Panorpa.

Tabula Specierum Europœarum.

A. Sub-costa alarum omnium costæ medium (nec ultra) tangens.

a. Alæ parce brunneo-punctatæ. Abdominis* ♂ segmenta 7 et 8 modica, conica.

P. alpina, Rambur.

aa. Alæ valde atro-punctatæ fasciatæque. Abdominis segmenta 7 et 8 elongata, angustata, conica; 7 supra ad basin conspicue tuberculatum.

P. caucasica, (De Selys).

B. Sub-costa alarum anticarum pterostigma tangens.

b. Abdominis ♂ segmenta 7 et 8 conica.

c. Segmentum 6 apicem versus gradatim angustius, truncatum; 7 et 8 modice elongata.

d. Appendices segmenti 9 elongatæ, haud truncatæ.

e. Alæ fasciâ subapicali completâ. Segmentum 6um 7mo longius. *P. communis*, L.

ee. Alæ fasciâ sub-apicali interruptâ. Segmentum 6um 7mo æquale.

P. connexa, McLach.

* *Panorpæ* abdomen censeo novem segmenta habere, quorum primum sub metanoto partim latet.

dd. Appendices segmenti 9 breves, ad apicem dilatatæ truncatæ.

f. Appendices breviores, ad apicem recte truncatæ, vix rotundatæ.

P. germanica, L.

ff. Appendices longiores, ad apicem oblique truncatæ, processus segmenti 3 valde major. . . . *P. gibberosa*, McLach.

cc. Segmentum 6 oblongum, supra concavum et ad apicem triangulariter productum, lateraliter excisum ; 7 et 8 brevia.

P. meridionalis, Rambur.

bb. Abdominis ♂ segmentum 7 plus minusve irregulariter cylindricum, supra dilatatum, 8 vix conicum, 6 quadratum vel oblongum, profunde lateraliter excisum.

g. Alæ conspicue atro-fasciatæ et maculatæ.

h. Segmentum 7 supra ad basin valde dilatatum ; appendicibus segmenti ultimi linearibus, elongatis, fere rectis, divaricatis.

P. annexa, (De Selys).

hh. Segmentum 7 supra in medio paullo dilatatum ; appendicibus segmenti ultimi brevibus, gradatim latioribus, ad basin apicemque convergentibus. *P. Ghilianii*, McLach.

gg. Alæ paullo fusco-nigro signatæ. Segmentum 7 fere regulariter cylindricum ; appendicibus segmenti ultimi rectis, linearibus, divaricatis. . . . . *P. cognata*, Rambur.

Species mihi non satis cognitæ.

a. Alæ flavo-tinctæ, fasciis duabus, maculis duabus vel tribus, apicibusque conspicue atro-signatæ. (♂ ignotus). . . . . *P. picta*, Hagen.

β. Alæ punctis tribus ante medium, linea irregulari obliqua pone stigma, apicibusque fuscis ; pterostigmate magno rufo. . *P. rufostigma*, Westwood.

Tabula magnitudinum.

P. alpina,	exp. alar.	12-13½ lin. (anglic.)	=25-28 millim.
P. caucasica	,, ,,	12 lin.	=25 mill.
P. communis	,, ,,	12-15½ lin.	=25-32 mill.
P. germanica	,, ,,	10-12 lin.	=21-25 mill.
P. gibberosa	,, ,,	12 lin.	=25 mill.
P. connexa	,, ,,	13 lin.	=27 mill.
P. meridionalis	,,	12-15 lin.	=25-31 mill.
P. annexa	,, ,,	13½-14 lin.	=28-29½ mill.
P. Ghilianii	,, ,,	10½-13 lin.	=22-27 mill.
P. cognata	,, ,,	13½-14½ lin.	=28-30½ mill.
P. picta	,, ,,	14½-17 lin.	=30½-37 mill.
P. rufostigma	,, ,,	13 lin.	=27 mill.

A. *Sub-costa in all the wings becoming confluent with the costa about half-way between the base and apex.*

1. Panorpa alpina, Rambur. (Pl. IV. fig. 1).

P. alpina, Rambur, Névrop. p. 330 (1842). *P. variabilis,* Brauer, Neurop. Aust. p. 35 (1857).

Found only in elevated districts, and probably occurs in all the mountain ranges of central Europe. Halloy in Belgium (De Selys). Has not yet been noticed in Britain.

The species with the wings least spotted of all, there being only scattered brown dots, whereof that at the pterostigma is the largest. Third abdominal segment (♂) considerably produced in the middle of its apex above; sixth slightly narrowed from base to apex, truncate; seventh and eighth cone-shaped, each as long as the sixth, narrow at the base, and the seventh with an indistinct tubercle at that part above; appendices of the last segment straight, flattened, and linear, short; claws of this segment short.

Rambur's type has lost, as he notes, the terminal segments, and he does not notice the short sub-costa, but the example now in De Selys' collection, proves the identity of the species with that of Brauer.

2. Panorpa caucasica, n. sp. (Pl. IV. fig. 2).
P. caucasica, De Selys, MS.

Taken in Mingrelia, by M. T. Deyrolle, in 1868. Two ♂ and three ♀ in De Selys' collection.

A species with the wings strongly marked; the sub-apical fascia forms a large, irregularly oblong spot, extending from the costa half across the wing, and then emitting two narrow curved branches to the inner margin. The antepenultimate and penultimate segments (♂) extremely long, and very narrow at the base, and very gradually and regularly dilated, the antepenultimate (7th) with a distinct tubercle at the extreme base above; the claws of the terminal segment very long. The whole body, including the terminal segments, deep black.

A very distinct and well-marked species.

B. *Sub-costa in the anterior wings reaching to the pterostigma.*

3. Panorpa communis, Linné. (Pl. IV. fig. 3).

P. communis, Linn. Faun. Suec. p. 384 (1761), et auct.

The commonest species in Northern and Central Europe.

The sub-apical fascia is angulate, and usually furcate on the inner margin, especially in the ♀, the apical spot large, and more or less broken up into smaller spots in its lower portion. The third abdominal segment (♂) is scarcely produced above at its apex; the sixth very long and truncate at the apex; seventh and eighth each shorter than the sixth, conical; appendices of the terminal segment long and cylindrical, approximating at the base and apex.

Var? *diffinis*, mihi. From Belgium and Piedmont I have ♂ ♀ of an insect which I cannot separate from *P. communis* by any certain structural characters, yet it has a somewhat different aspect, being smaller (exp. alar. 12 lin.) than usual, and more compact; the third segment is, perhaps, more sensibly produced in the middle. Baron de Selys Longchamps finds it with the type-form, yet preserving its peculiar facies: further investigation may perhaps establish its right to specific distinction. An insect figured in Imhoff and Labram's "Insekten der Schweiz," under the name of *P. vulgaris*, may possibly be the same as this.

4. Panorpa germanica, Linné. (Pl. IV. fig. 4).

P. germanica, Linn. Syst. Nat. p. 915 (1767); Curtis, Brit. Ent. pl. 696; Ramb. Névrop. p. 329; Eaton, Ann. and Mag. Nat. Hist. 1867, p. 397. *P. affinis*, Leach, Zool. Misc. ii. p. 98, pl. 94, fig. 2 (1815); Steph. Ill. p. 52. *P. apicalis*, Steph. Ill. p. 52 (1836). *P. montana*, Brauer, Neurop. Aust. p. 36 (1857). *P. borealis*, Steph. Ill. p. 53 (1836)?

Almost equally common with the last in all Northern and Central Europe, and certainly the true species described by Linné, according to the type in his collection.

Wings with a slight brownish tinge; markings maculate (not fasciate), the apical spot moderate (varies very greatly in number and intensity of markings). The third abdominal segment (♂) is strongly produced in the middle of the apical margin above; the sixth scarcely longer than the seventh, truncate at the apex; seventh and eighth cone-shaped; appendices of the terminal segment short, flattened, dilated and truncate at the apex.

5. Panorpa gibberosa, n. sp. (Pl. IV. fig. 5).

Montenegro (♂) and Isle of Tinos (♀). Taken by M. Erber, and sent by him to the Baron de Selys Longchamps, who has submitted it to my examination.

A species evidently allied to *P. germanica*, yet decidedly distinct; in size rather larger. In the ♂ the wings have a faint yellowish tinge; in the basal half are one or two indistinct dots; at the pterostigma is a large quadrate blackish-brown spot, and a dot below it, and the apex is also blackish-brown. The third abdominal segment is produced, in the middle of its apical margin above, into a large rounded hump; the sixth longer than the seventh, formed as in *P. germanica*; the seventh and eighth equal, conical; appendices of the terminal segment formed somewhat as in *P. germanica*, but longer; the apex oblique, produced at the inner angle, and afterwards very slightly excised; beyond the apex of each of these appendices is to be seen the point of a large crotchet which underlies them (this is also evident in *P. germanica*, but less conspicuously).

The ♀, from Tinos, which I consider to pertain to the same species, has the wings more strongly marked; the basal spots are larger, that at the pterostigma smaller,

but below it are two others, the three forming a maculose fascia; the apex as in the ♂; several of the transverse veinlets much clouded.

The ♂ much resembles some forms of *P. cognata* in its markings. There is a strong probability that this is *P. rufostigma*, Westwood (*vide post*, p. 68), and the ♀ above noted agrees remarkably in its markings with those of the ♂ of that species, as described by Professor Westwood; yet both sexes want the large red pterostigma from which the name was derived, that portion of the wings being only more decidedly yellower in M. Erber's examples. Under these circumstances, I think it best to describe the species as distinct. The abdominal characters are much as in *P. germanica*, but the hump on the third segment is very much larger, and the appendices of the last segment differ, although formed after the same plan.

6. Panorpa connexa, n. sp. (Pl. IV. fig. 6).

Taken in Mingrelia, by M. T. Deyrolle, in 1868. Two ♂ in De Selys' collection.

Of the same size as *P. germanica*, and allied thereto. The wings show a wedge-shaped spot extending from the pterostigma half across the wing, with an elongate spot on the inner margin, the two markings forming an interrupted sub-apical fascia; the apical spot small; two or three small spots in the basal half. Third abdominal segment (♂) not produced in the middle of the apical margin above; sixth as in *germanica;* seventh and eighth conical, more elongate than in *germanica*, the seventh slightly the longer; appendices of terminal segment long, linear, slightly dilated towards the apex, but not truncate.

7. Panorpa meridionalis, Rambur. (Pl. IV. fig. 7).

P. meridionalis, Rambur, Névrop. p. 329 (1842); Ed. Pict. Névrop. d'Espagne, p. 83, pl. viii. fig. 9-12.

Middle and South of France, Pyrenees, Spain.

A large species, with the wings very strongly marked with deep black, and the veins also black: ordinarily there is an isolated black spot in the middle of the base, two large opposite spots before the middle (nearly forming an interrupted fascia), a costal spot in the middle, a

sub-apical fascia furcate in its lower half, and a broadly black apex, in which are two pale dots. The third abdominal segment (♂) scarcely produced in the middle of the apex above; sixth oblong, the upper surface concave and produced at the apex in a triangular form, the sides excised (not edged with yellow); seventh and eighth cone-shaped, short, narrow at the base, and very much dilated at the apex; appendices of the terminal segment linear, flattened, approximating at the base and apex (a small lobe at the base of the claws of this segment). Head and terminal segments bright reddish.

This species has the sixth segment formed after the manner of that in the succeeding species, but the seventh and eighth both cone-shaped, as in the preceding.

8. Panorpa annexa. (Pl. IV. fig. 8).

P. annexa, De Selys, MS.; *P. meridionalis*, Schneider, Stett. Zeit. 1845, p. 340 (*nec* Rambur). *P. cognata*, var., Hagen, Ann. Soc. Ent. France, 1860, p. 747, (*nec* Rambur).

Monte Viso (Piedmont), Sicily; probably in all Italy.

All the markings smaller and less intense than in *P. meridionalis*, the apical border enclosing one large hyaline spot in its lower half; the veins less strongly black. Third abdominal segment (♂) slightly produced in the middle of its apical margin above; sixth short, quadrate, broader than long, the lateral margins deeply excised (ordinarily edged with yellow), the apex above scarcely produced; seventh longer than the sixth, inserted below the excision, viewed from the side its lower edge is straight, its upper edge greatly swollen near the base, then deeply concave, and finally raised at the apex; eighth sub-cylindrical, scarcely cone-shaped, slightly swollen above towards the base; appendices of the last segment straight, linear, flattened, slightly divergent from base to apex (a small lobe at the base of the claws of this segment). Head, rostrum, and terminal segments ordinarily reddish.

Hitherto confounded with *P. meridionalis*, but very distinct. The examples from Monte Viso (Ghiliani) are smaller than those from Sicily, and darker; the head sometimes marked with blackish, and the apical margin of the sixth segment not edged with yellow.

9. Panorpa Ghilianii, n. sp. (Pl. IV. fig. 9).

Turin (received from the Chevalier Victor Ghiliani).

A small species, and strongly marked with black. In the anterior wings there is a small spot in the disc near the base, three spots before the middle, a small costal spot in the middle, a sub-apical fascia formed by a large costal spot emitting two narrow branches to the inner margin, and a very broad black apex, which encloses one or two pale dots at its upper and lower edges. Third abdominal segment (♂) not produced above; sixth formed as in *P. annexa*, but longer, and with the apex more produced above, as in *P. meridionalis;* seventh inserted below the excision, slightly shorter than the sixth, formed much like that in *P. annexa*, but shorter, thinner at the base, the upper edge less swollen, and the swelling further from the base, afterwards less concave and less elevated at the apical margin; eighth shorter than the seventh, sub-cylindrical, scarcely cone-shaped; appendices of the last segment short, flattened, rather broad, obtusely rounded at the apex, nearly parallel (a larger lobe at the base of the claws of this segment).

I have seen two ♂ and one ♀ of this distinct species.

10. Panorpa cognata, Rambur. (Pl. IV. fig. 10).

P. cognata, Rambur, Névrop. p. 330 (1842); Eaton, Ann. & Mag. Nat. Hist. 1867, p. 397; McLach. Trans. Ent. Soc. Lond. 1868, p. 216. *P. germanica*, Brauer, Neurop. Aust. p. 36 (*nec* Linn.). *P. alpina*, Hag. Ent. Ann. 1858, p. 32 (*nec* Rambur).

Central Europe, South of England, Belgium.

Wings less marked than any of the European species, excepting *P. alpina*, and the markings are brown, and not black or blackish; ordinarily there is a small dot at the commencement of the second sector, a large more or less quadrate spot at the pterostigma, scarcely united to a smaller one below it, and an irregular apical spot (but frequently there are only the apical spot and that at the pterostigma). The third abdominal segment is considerably produced in the middle of its apical margin above; sixth oblong, longer than broad, somewhat produced at its apex above, the sides excised; seventh sub-cylindrical, its upper edge scarcely swollen near the base, concave towards the apex, and with the apex slightly

elevated, rather shorter than the sixth; eighth cylindrical, obscurely cone-shaped; appendices of the terminal segment long, cylindrical, straight, slightly divergent. Head and terminal segments reddish.

Rambur was unacquainted with the locality of his type, and thought it might be exotic; but it undoubtedly represents this rather local European species.

(*Species insufficiently known to me*).

11. Panorpa picta, Hagen. (Pl. IV. fig. 11).

P. picta, Hagen, Wien. Ent. Monatsch. vol. vii. p. 199 (1863).

Asia Minor and South Russia.

The male of this species is yet unknown. Hagen's type from Asia Minor is a ♀, and I possess an example of that sex, received from Professor Zeller (*nigrirostris*, Zeller, MS.), collected by Kindermann in Southern Russia, which I believe to belong to this species, though it is considerably smaller (exp. alar. 14½ lin. =30½ mill.) than the dimensions given by Hagen.

It is a large insect, with the body (rostrum included), save the terminal abdominal segments, deep black, and belonging to section B. The wings are broad and obtuse, slightly tinged with yellowish, and with the black markings strongly indicated. At the base of the disc of the anterior wings is an isolated spot, above which, on the costa, is a smaller one; before the middle is a broad irregular fascia; in the middle of the costa a large spot; a broad sub-apical fascia, forked in its lower half, and much constricted before the furcation; and a broad apical band, enclosing a large hyaline spot in its lower half.

The only European species with a complete fascia before the middle.

12. Panorpa rufostigma, Westwood.

P. rufostigma, Westw. Trans. Ent. Soc. Lond. vol. iv. p. 186 (1846).

Albania.

Indicated by Westwood as perhaps a var. of *P. germanica*, and remarkable for its large red pterostigma. The type is in the collection of Mr. S. S. Saunders, of Corfu, and I am unable to give any more precise information concerning the species. A Grecian species is also noticed by Stein (Berl. Ent. Zeits., 1863, p. 414)

under *P. communis*, which may possibly be the ♀ of Westwood's insect; and both may be the same as *P. gibberosa* (*ante*, p. 64).

Description of a new species from Java.

PANORPA NEMATOGASTER, n. sp. (Pl. IV. fig. 12).

P. nigra. Thoracis dorsum rufo-varium; pectus pedesque rufi vel rufo-fusci. Abdominis segmentum 3um processu curvato supra in medio longe productum; 4tum tuberculo uno supra instructum; 6um 5to duplo longius, apicem versus gradatim paullo angustius, truncatum; 7um et 8um singulatim 6to duplo longius, per-angustum, apicem versus paullo gradatim dilatatum; 9um parvum, forcipe elongato, appendicibus crassis, rectis. Alæ per-angustæ, flavo-testaceæ, nitidæ, haud signatæ; pterostigmate rufo-fuscescente. Tarsorum ungues bi-dentati.

Long. corp. ♂ $10\frac{3}{4}'''$, ♀ $6'''$; exp. alar. ♂ $13\frac{1}{2}'''$, ♀ $14'''$.

Hab.—Java. In Muss. Brit. (Wallace), et Oxon.

♂. Head, antennæ, and abdomen dull black. Pronotum black, posteriorly reddish at the sides. Meso- and meta-nota red, the former black in front. Breast red, with two small black dots on each side. Rostrum reddish, with a broad lurid stripe down the front. Palpi reddish, the apical joint black. Legs reddish; claws of the tarsi with two broad and blunt teeth internally below the apex. Wings very narrow, shining pale yellowish testaceous, without markings of any kind, save that the pterostigma is slightly fuscescent; veins blackish, subcosta reaching to the pterostigma in the anterior wings. Abdomen very slender; third segment produced in the middle of its apical margin above, into a long slender curved process, slightly dilated at the extremity; fourth with a small tubercle in the middle above; third, fourth, and fifth nearly equal in length; sixth nearly twice the length of the fifth, gradually but slightly narrowed towards the apex, which is obliquely truncate; seventh and eighth each about twice the length of the sixth, very slender, the apex gradually dilated; ninth small, the forceps very long, the points curved and crossing each other, appendices short and thick, straight.

♀. Differs in the breast and legs being more obscurely reddish, somewhat fuscescent.

A singular species; remarkable for the long and very slender abdomen of the male, and for the pale wings without markings, which give it somewhat the appearance of a small *Bittacus*. There is one ♂ and one ♀ in the collection of the British Museum (formerly in that of Mr. W. W. Saunders), collected in Java by Mr. A. R. Wallace; and one ♂ in the Oxford Museum.

I do not know *P. Charpentieri* of Burmeister, from the "East Indies," which, from the brief diagnosis, is a very slender species, without markings, save one dot in each wing.

Note on the distribution of the genus Panorpa.

Up to the present time about thirty-six species have been noticed. In Europe and the adjoining countries, twelve; some of these, no doubt, extend to North Africa, but the genus has not been brought from the tropical and southern parts of that Continent; three are described from the Asiatic Continent, excluding Caucasia and Asia Minor; five are indicated from Japan, some of which, probably, occur also in North China; three from Java; and about thirteen from North America. South America has not as yet furnished any species, though it is probable that some may occur in Chili. From Australia they are also absent, for *P. ruficeps*, of Newman, which comes from that quarter, should be referred to Westwood's genus *Euphania** as a second species.

* It appears to me that *Euphania* is identical with *Chorista* of Klug; and that *E. luteola* is the same as *C. australis*.

Explanation of Plate IV.

(*Panorpa*; *a* denotes apex of abdomen; *b*, appendices).

Fig. 1. Anterior wing of *P. alpina*, ♂. (1*a*, 1*b*).
2. ,, ,, *P. caucasica*, ♂. (2*a*, 2*b*).
3. ,, ,, *P. communis*, ♂. (3*a*, 3*b*).
4. ,, ,, *P. germanica*, ♂. (4*a*, 4*b*).
5. ,, ,, *P. gibberosa*, ♂. (5*a*, 5*b*).
6. ,, ,, *P. connexa*, ♂. (6*a*, 6*b*).
7. ,, ,, *P. meridionalis*, ♂. (7*a*, 7*b*).
8. ,, ,, *P. annexa*, ♂. (8*a*, 8*b*).
9. ,, ,, *P. Ghiliánii*, ♂ (9*a*, 9*b*).
10. ,, ,, *P. cognata*, ♂. (10*a*, 10*b*).
11. ,, ,, *P. ficta*, ♀.
12. *P. nematogaster*, abdomen of ♂, and terminal segment magnified.

XI. *Descriptions of new Species of Diurnal* Lepidoptera. By W. C. Hewitson, F.L.S.

[Read 5th April, 1869.]

The following are descriptions of six new species of butterflies, belonging to the genera *Leptalis*, *Pieris*, *Catagramma*, *Heterochroa*, and *Aterica*; to these is added a description of the male of *Harma Hypatha*, the female of which has been figured in "Exotic Butterflies."

1. *Leptalis Carthesis.*

Male. Upperside. Dark brown. Anterior wing long and narrow, costal margin much and regularly curved, apex rounded, outer margin sinuate: crossed at the middle by a band divided into four by the nervures, deeply sinuate (nearly cut in two) on its inner margin near and below the sub-costal nervure: a sub-apical band of three spots, and a large oval spot on the inner margin, all white. Posterior wing with the costal half polished, and bordered outwardly by a band of white, dentate on its outer border at the nervures; the wing beyond this band brown.

Underside. Anterior wing with the basal half (except the costal margin, which is brown) polished; the spot on the inner margin much larger, the central band the same as above; beyond it brown, the apical band larger, divided into five by the nervures. Posterior wing brown, the costal margin, a band below and parallel to it (partly orange), three spots below this (two tinted with orange), and a central band from the base, yellow; below this band, rufous crossed by dark brown nervures, and a submarginal band of pale yellow spots.

Exp. $2\frac{7}{20}$ inches.

Hab.—Demerara.

In the collection of Mr. Herbert Druce.

I do not know any species with which to compare this. It has the form of *L. Astynome* and the colour of *L. Critomedia*.

2. *Pieris Parorcia.*

Upperside, white. Anterior wing with the costal margin dark brown, narrow: the apex and outer margin broadly dark brown, deeply sinuate on its inner border and marked by five hastate white spots indistinct below the apex. Posterior wing with the margin (which is broken into spots near the anal angle) and three or four spots near the apex, dark brown.

Underside, white, tinted with yellow on the posterior wing. Anterior wing with the apical spots much larger than above, six in number, and tinted with yellow. Posterior wing with the base, a spot at the end of the cell, and the outer margin, brilliant yellow, with two submarginal bands of black spots; the inner band of seven large spots.

Exp. 2½ inches.

Hab.—Cape Coast Castle.

In the collection of W. C. Hewitson.

Very near to *P. Calypso*, but, I believe, distinct. It is without the black spots which mark the end of the cell on both wings of that species.

3. *Catagramma Aphidna.*

Male. Upperside. Black: the fringe of both wings spotted with white. Anterior wing with the basal half carmine; a sub-apical bifid band of white, with some irrorations of white at each end of it. Posterior wing with two or three spots of pale blue near the anal angle.

Underside. Anterior wing as above, except that the costal margin at its base is yellow, that there is a line of blue near and parallel to the costal margin, that the subapical band is longer and tinted with yellow, and that there is a sub-marginal band of cærulean blue, and between it and the apex a band of gray. Posterior wing lilac-gray: the base yellow: two lines of dark brown commence at the base of the costal margin each by a carmine spot, run nearly straight and parallel to each other and the inner margin to the anal angle, are continued near the outer margin and slightly undulated, and join the costal margin near the middle: these lines enclose between them, near the anal angle, some spots of cærulean blue: the outer margin dark brown: at the centre

of the wing there are two large black spots, one (near the costal margin) marked by three spots of cærulean blue, the other with two, all bordered with ochreous yellow.

Exp. $1\frac{8}{10}$ inch.

Hab.—Venezuela (Valencia).

In the collection of W. C. Hewitson. From Mr. Goering.

Near to *C. Thamyras*, of Menetries. The underside of the posterior wing is, however, of a very different and unusual colour, and unlike any other butterfly.

4. *Heterochroa Caphira.*

Female. Upperside. Dark brown. Both wings crossed by a broad white band, which commences at the second median nervule of the anterior wing, where it is crossed by black nervures, and ends at the anal angle of the posterior wing, crossed by white nervures. Anterior wing with four black lines in the cell: a large spot near the costal margin beyond its middle, two small spots below this, and two near the apex, all orange: two submarginal black bands. Posterior wing with three submarginal bands.

Underside. Rufous brown, with the central band as above. Anterior wing with the base white, crossed in the cell by a line of brown, followed by a large white spot, and beyond the cell by two small ones, all bordered with black (as in *H. Melona*) ; the orange spots of the upperside white, the apical spots forming part of a submarginal band of spots, between which and the margin there is another band of spots, also white. Posterior wing with the base white, crossed by two rufous bands: the central band bordered above with rufous-brown, the wing below the white band dark brown, crossed by three bands of pure white, and a fourth band much less distinct.

Exp. $2\frac{8}{10}$ inches.

Hab.—Venezuela (Valencia).

In the collection of W. C. Hewitson. From Mr. Goering.

5. *Aterica Zeugma.*

Female. Upperside. Orange-rufous. Anterior wing with two spots within the cell bordered with dark brown :

the apical half dark brown, crossed obliquely by a band of white divided into five parts by the nervures: a sub-apical band of four white spots. Posterior wing darker near the outer margin, with two sub-marginal bands of brown spots.

Underside. Rufous-yellow, with the outer margins rufous brown. Anterior wing with the band and spots of white as above: a spot in the cell and the inner margin of the band dark brown. Posterior wing with a spot in the cell and an oblique band before the middle (dark on the costal margin, indistinct below) both dark brown, the submarginal bands marked by pale spots, those of the inner band white.

Exp. $2\frac{3}{10}$ inches.

Hab.—Old Calabar.

In the collection of W. C. Hewitson.

Like the females of *A. Tadema* and *Ampedusa* above: but much brighter in colour, and completely different on the underside.

6. *Aterica Abesa.*

Male. Upperside. Dark blue-brown (so dark that it is not easy to see the still darker spots). Anterior wing with two spots within, and one outside the cell: crossed by bands before and after the middle, and by two sub-marginal bands of large dark brown spots. Posterior wing without spots.

Underside. Lilac-gray, rufous at the inner margin of the anterior wing: both wings clouded with pale brown, both crossed near the middle by a zig-zag brown line, followed on both by a band of small brown spots. Anterior wing with a small brown spot, and two larger spots, bordered with brown, within the cell: a pale spot on the costal margin beyond the middle. Posterior wing with two or three small black spots at the base.

Exp. $2\frac{1}{10}$ inches.

Hab.—Cape Coast Castle.

In the collection of W. C. Hewitson.

Like *A. Veronica* and *Cærulea* on the upperside, but very different from any other species on the underside.

7. *Harma Hypatha*, ♂.

♀. *Harma Hypatha*, Hew. Ex. Butterflies, vol. iii. pl. 29, figs. 7, 8.

Male. Upperside. Orange. Both wings crossed by a band of black, which commences at the second median nervule of the anterior wing, and extends to near the anal angle; the base and abdominal fold of the posterior wing, and the outer margin of both wings, brown, irrorated with yellow; both with a sub-marginal band of black spots. Posterior wing with a line of black at the anal angle.

Underside. Rufous-brown, tinted with lilac; darker from the base to the middle, where they are crossed by a slightly undulating line of dark brown, followed by a band of indistinct brown spots, and by a sub-marginal band of small brown spots bordered below with paler colour, both with a zig-zag line at the middle of the costal margin. Anterior wing with two spots within the cell bordered with brown. Posterior wing with a brown spot within the cell, and two sub-basal spots of pale yellow.

Exp. $3\frac{3}{10}$ inches.

Hab.—Old Calabar.

In the collection of Mr. Herbert Druce.

Resembles *H. Theodota* and *Hyarbita* of the "Exotic Butterflies."

XII. *Notes on Eastern Butterflies.* By Alfred R. Wallace, F.Z.S., V.P. Ent. Soc., &c.

[Read 5th April, 1869.]

As my collection still contains some undescribed species, many sexes and variations not yet noticed, and specimens from many localities which have not yet been published, I propose to give a series of short papers embodying whatever information I possess on the genera which are more especially characteristic of the Malay Archipelago and adjacent regions. I hope thus to furnish some materials towards the general catalogue of butterflies now preparing by Mr. Kirby, as well as to correct a few errors in specific and sexual determinations, and in synonymy, which those who have had less copious materials may have fallen into.

I begin with the genera *Mynes* and *Prothoe*.

Genus Mynes, Westwood.

The genus *Mynes* originated with Boisduval, who placed in it two species, *M. Leucis*, Boisd., and *M. Geoffroyi*, Guér. (the *Nymphalis Geoffroyi* of Guérin Méneville), but gave no characters whatever by which to distinguish it. Professor Westwood, in the Genera of Diurnal Lepidoptera, first characterized the genus, taking as the type *Mynes Geoffroyi*, the only species at that time existing in the national collection. In 1862, Mr. Hewitson figured and described several forms (which he considered varieties) of *Mynes Leucis*, collected by myself. A little later Vollenhoven described as distinct one of the varieties figured by Mr. Hewitson; but I cannot find that any other author has occupied himself with the genus, owing perhaps, to the great rarity of all the species.

On comparing my specimens with Westwood's description of the genus, I found, to my astonishment, that *M. Leucis* and its allies differ most remarkably from *M. Geoffroyi*, in the neuration of the wings and other characters, so as to render it impossible to keep them in the same genus; while they agree so closely with *Prothoe* as to make it equally impossible to separate them from that genus. The antennæ, palpi, and feet, the form of the discoidal cell, and especially the curious and unusual arrangement of the branches of the subcostal vein, are

identical in both; so that notwithstanding a slight difference of facies and of marking, and a remarkable contrast in geographical distribution, I feel compelled to place *Leucis* and its allies in the genus *Prothoe*. The genus *Mynes* is thus reduced to the single species *M. Geoffroyi*, to which, however, I have now to add two new ones. This small group consists of rather active insects, frequenting the more sunny parts of the forest, and settling on foliage or on flowers. Their head-quarters are New Guinea, and the adjacent islands of the Papuan group.

1. Mynes Geoffroyi.

Nymphalis Geoffroyi, Guérin, Voy. de la Coquille, Ins. pl. 16, f. 1.

Mynes Geoffroyi, Boisd. Voy. de l'Astrolabe, Entom. pt. 1, p. 130; Westwood, Gen. Diurn. Lep. p. 268.

Hab.—New Guinea (Dorey); Salwatty; Waigiou (Wallace).

The female differs in having the ground-colour of the wings paler greenish-white, and the dark margins less intense and less sharply defined. The apical spots on the under surface are less yellow. A beautiful variation occurs, in which the disc of the under surface of the hind-wings is almost covered with a large oval transverse white spot washed with rich yellow towards the anal margin. This specimen (a male) was found at Dorey, along with others having the usual black hind-wings, and I was, at first, disposed to consider it a distinct species; but in a female specimen from Salwatty, I observe the commencement of a similar white spot which is *unequal* on the opposite wings, showing the tendency of this part to sport or variation.

2. Mynes Guerini, n. sp.

Female. Apex of upper wings more rounded, and the short tails of the hind wings rather more divergent than in *M. Geoffroyi*.

Upperside. Anterior wings with rather more than the outer half black, with a curved band of three or four yellowish-white spots just within the apex; base greenish-white, with scattered dusky scales towards the limits

of the black portion. Hind wings with a broad black border, within which is a broad slaty-greenish band, the basal third of the wings being yellowish-white; on the outer posterior portion of the wing is a narrow submarginal bluish-green band.

Underside. Almost entirely black, the base and inner margin of the anterior wings alone being whitish; the apical band as in *M. Geoffroyi*, but deep yellow, the white spot on the costal margin almost obsolete. On the hind wings the markings as in *M. Geoffroyi*, but more defined, and the yellow band deeper, within which are two faint crenated ashy bands, not reaching the outer angle.

Expanse of wings, $2\frac{1}{2}$ inches.

Hab.—Queensland, Australia. (Coll. Wallace, B. M.)

I received a single specimen in a small collection from Queensland, and consider it to be undoubtedly distinct. A rather larger specimen, also a female, and from the same locality, is in the British Museum.

3. Mynes Doubledaii, n. sp.

Female. Form of wings as in *M. Geoffroyi*.

Above, dusky brown; the anterior wings yellowish at the base, and with a yellow sub-apical arc divided by the dusky nervures; posterior wings whitish at the base and abdominal margin.

Beneath, blackish brown; anterior wings with the cell yellow, apical arc more dilated than above, and continued in a sub-marginal line to the outer angle, yellowish: a submarginal yellow spot near the middle of the costa, an irregular one attached to the end of the cell, and two before the sub-apical arc; an ovate red spot in the middle of the outer margin on the inside of the submarginal line. Hind-wings with the basal margin red, the abdominal and posterior region yellow-ochreish, with faint dusky lunulate bands, and a double marginal stripe of yellowish-white.

Exp. $3\frac{1}{10}$ inches.

Hab.—Ceram.

I received this curious and very distinct species in a collection from Ceram, and have named it after the late Edward Doubleday, in the continuation of whose celebrated work, the Genera of Diurnal Lepidoptera, the genus was first described.

Genus Prothoe, Hübner.

1. Prothoe Franckii.

Nymphalis Franckii, Godt. Enc. Meth. ix. p. 825.

Prothoe Franckii, Hübn. Samml. exot. Schmett. ii. pl. . Westwood, Gen. Diurn. Lep. p. 256, pl. 51. f. 3.

Paphia Franckii, Horsfield, Lep. of Java, pl. 5, f. 4, 4*a*.

Hab.—Java (Horsfield), Malacca, Sumatra (Wallace).

This beautiful insect is not uncommon in Sumatra. It has the habit of settling with closed wings on sticks or the trunks of trees, with which the peculiarly shaded markings of its underside harmonise so as to render it difficult to detect.

2. Prothoe Leucis.

Mynes Leucis, Boisd. Voy. de l'Astrolabe, Ent. pt. 1, p. 129; Hewitson, Proc. Zool. Soc. 1862, p. 87, var. A. ♂. (? ♀); var. B. pl. ix. f. 1, ♀.

Nymphalis australis, Guér. Voy. de la Coquille, Ins. pl. 14 bis, f. 4.

Hab.—New Guinea (Dorey), Mysol, Salwatty, Waigiou (Wallace).

The specimens described by Boisduval and Guérin were from Waigiou (Offack). The females, as in some allied forms, have the markings either white or yellow, the males I believe always yellow. A considerable number of specimens collected by myself shew that this species is pretty constant in its external characters. This and the allied species frequent shady places in the forest; they fly slowly, and the females often settle on the ground while the males rest on low foliage.

3. Prothoe Mulderi.

Mynes Mulderi, Vollenh. Tidj. v. Ent. vi. 129, pl. 8. f. 1, 2, ♂.

Mynes Leucis, var. D., Hewits. Proc. Zool. Soc. 1862, p. 88. var. E., Hewits. *l. c.* pl. ix. 2, 3.

Hab.—Batchian, Gilolo, Morty Is. (Wallace).

This species, like the last, has the females marked either with white or ochreish yellow, the males with yellow of a paler and clearer tint. This is a strikingly distinct species, and is confined to the geographical sub-district of the northern Moluccas.

4. Prothoe Westwoodii, n. sp.

Mynes Leucis, var. F., Hewitson, Proc. Zool. Soc. 1862, p. 88. (♀).

Form of wings as in *P. Mulderi*, but the anterior are less rounded, and the posterior more produced behind into a broad tail.

Male. Above, resembles *P. Mulderi*, but the spots are less divided by the nervures, and the base is much less ashy. The large spot on the hind-wings is obliquely truncate towards the anal angle, not regularly rounded as in *P. Mulderi*. Beneath, the spots on the disc are paler and larger, the marginal spots very small on the upper wings, the yellow caudal spot much larger, and the two pairs of blue lunules above it united so as to form complete heart-shaped figures.

Female. Differs from the corresponding sex of *P. Mulderi* by the white patch on the anterior wings including the two lower submarginal spots. The markings are either pure white, or rather paler yellow than in the male.

Hab.—Aru Islands.

The decided difference, both in form and markings, although slight in amount, induces me to consider this a distinct species.

5. Prothoe Hewitsoni, n. sp.

Mynes Leucis, var. G., Hewitson, Proc. Zool. Soc. 1862, p. 88, pl. ix. f. 4, ♀.

Hab.—New Guinea, Mysol. (Wall.)

The male agrees very closely with Mr. Hewitson's figure of the female, the yellow bands being somewhat narrowed, a little better defined, and more deeply coloured. The underside has the same markings as the upperside, with the basal and marginal spots and lines, as in the allied species.

The three specimens which I possess, including both sexes, agree so closely with each other, and are so remarkably different from the allied forms, that I have no hesitation in considering it a distinct species; and have much pleasure in naming it after the gentleman to whom we are indebted for thousands of accurate and beautiful figures of butterflies.

XIII. *Characters of some undescribed Species of* Phytophaga *belonging to the Families* Cassididæ *and* Hispidæ. By J. S. Baly, F.L.S.

List of Species.

Cassididæ.

Dolichotoma distincta	. . .	Nicaragua.
Calaspidia Bacchus	. . .	Para.
Calaspidia connectens	. . .	Upper Amazons.
Mesomphalia honorata	. . .	Bolivia.
Batonota collaris	. . .	Upper Amazons.
Batonota rufo-ornata	. . .	Nicaragua.

Hispidæ.

Alurnus ornatus	. . .	Nicaragua.
Eurispa Odewahnii	. . .	South Australia.
Eurispa normalis	. . .	Queensland.
Eurispa Howittii	. . .	Melbourne.

Fam. CASSIDIDÆ.

Dolichotoma distincta.

Late rotundata ♂, subrotundata ♀, modice convexa, subtus (cum capite) nigra, nitida, supra viridi-ænea, subopaca, pube brevissimâ depressâ adspersa; thorace fere impunctato, utrinque depresso, medio tenuiter canaliculato, antice leviter carinato; elytris minus distincte rugoso-punctatis, antice retusis, gibbosis, margine valde explanato (præsertim in medio ♂), obsolete transversim ruguloso, medio maculâ magnâ inæquali subrotundatâ ornato.

Long. 7½ lin.

Hab.—Nicaragua.

Much larger than *D. biplagiata* and its allied species, its elytra more finely punctured and less rugose, being nearly intermediate in punctation between *D. pubescens* and *biplagiata*.

Calaspidea Bacchus.

Subrotundata, postice paullo angustata ♂, magis ovata ♀, convexa, nigro-ænea, subnitida; elytris sanguineis, distincte punctatis, limbo exteriori (basi dilatato) maculisque impressis subseriatis nigro-æneis.

Long. 7½-9½ lin.

Hab.—Para.

Antennæ black, longer than the thorax, robust, tapering at base and apex, third joint distinctly longer than the fourth. Thorax twice as broad as long, sides somewhat obliquely rounded and dilated to beyond the middle, thence nearly parallel and slightly rounded to the base; surface subopaque, broadly excavated on either side, excavation impressed with a shining obtusely angled line; middle of disc nitidous, impressed with a fine longitudinal groove. Elytra much broader than the thorax, shoulders prominent, obtusely rounded; sides obliquely rounded and dilated nearly to their middle, thence obliquely rounded and narrowed to their apex; above convex, distinctly punctured on the disc, the latter shining; the dilated margin subopaque, more finely punctured; sanguineous, the outer limb, dilated on the humeral margin, and numerous depressed spots scattered over the surface, nigro-æneous; those on the disc small and arranged in nearly regular longitudinal rows; those on the dilated limb larger and less regularly placed.

Most nearly allied to *C. columbiana*; its antennæ are shorter and rather more robust, the sides of the thorax are less oblique; the nigro-æneous border of the elytra is much broader, and the patches of the same colour on their dilated limb are much larger than in that species.

Calaspidea connectens.

Subrotundata ♂, subtriangularis ♀, convexa, viridi-ænea, subnitida, subtus nigra, nitida; thorace longitudine duplo latiori, lateribus ad medium minus oblique ampliatis, hinc ad basin fere parallelis, basi ipsâ paullo convergentibus, obtuse rotundatis; elytris subopacis, elevato-reticulatis, reticulis nitidis, areolas minores includentibus, vittâ latâ sublaterali sanguineo-reticulatâ, infra basin ad apicem extensâ, postice angustatâ ornatis; antennis thorace paullo longioribus, gracilibus.

Long. 7-9 lin.

Hab.—Pebas, Upper Amazons.

The present insect forms almost an intermediate link between *C. regalis* and *C. discors*, agreeing in colouring with the former, and in form of thorax, antennæ, and sculpture of elytra with the latter: from *C. regalis* it may be at once known by the much more slender antennæ, and by the finer sculpture of the elytra; the form of the thorax is also entirely different; in *C. regalis* this part of the body is much broader, and the sides are obliquely rounded, and dilated considerably beyond their middle; in *C. connectens* (as also in *C. discors*) the thorax is narrower, its sides are first produced almost directly outwards (being only slightly and obliquely rounded) to their middle: thence to their base they are nearly parallel, and very obtusely rounded. The diagnosis between *C. discors* and the species under consideration is rather more difficult: the two insects entirely agreeing in the slender antennæ and form of thorax, but differing both in colouring and in the general form of the body. The ♂ of *C. connectens* (judging from a single specimen in my collection) is more rotundate and less narrowed towards the apex of the elytra; whilst the ♀ is more decidedly triangular in form, the elytra being broader and less narrowed at the shoulders than in *C. discors;* the red colour on the elytra is confined in *C. discors* to a large ovate patch on the anterior half of the dilated border; in *C. connectens* it forms a broad submarginal stripe, similar to that on the elytra of *C. regalis*.

Mesomphalia honorata.

Subtriangularis, modice convexa, nigro-ænea, subopaca; elytris pube brevi cinereâ sparse adspersis, ante medium gibbosis, disco tenuiter lateribus sat profunde punctatis, elevato-reticulatis, reticulis subnitidis, areolas parvas includentibus, plagâ magnâ trigonatâ, ab humero ultra medium et intus fere ad suturam extensâ fulvo-flavâ fusco notatâ ornatis.

Long. 8½ lin.

Hab.—Bolivia.

Antennæ black; thorax more than twice as broad as long, very slightly emarginate in front, sides produced

nearly directly outwards to beyond their middle, thence very obtusely rounded and slightly converging to their base; upper surface very minutely punctured, slightly excavated on either side, impressed in the medial line with a very faint longitudinal groove. Elytra much broader than the thorax, shoulders not produced, obliquely rotundate-ampliate; sides rotundate-angustate from the shoulders to the apex, the latter conjointly acute; upper surface gibbose before the middle, the gibbosity obtuse, slightly compressed on the sides, space in front of the gibbosity covered with two or three large foveæ, remainder of the surface (base and apex of the dilated border excepted) covered with slightly raised, irregular reticulations; those on the yellow patch (which, stretching along the outer margin of each elytron from the shoulder to beyond the middle, extends inwards nearly to the suture) coarser and more elevated than the rest; outer margin broadly dilated, the portion of its outer edge covered by the yellow patch deeply punctured.

This insect resembles in form *M. textilis;* its colour, however, is entirely different, and the lateral margin of the elytra is much broader and flatter.

Batonota collaris.

Subtriangularis, convexa, subtus nigra, nitida, supra opaca, et pube brevi cinereâ sparse adspersa; antennarum basi pedibusque anticis intus, obscure flavis; thorace scutelloque obscure rufis, illo antice carinato; elytris obscure viridi-æneis, antice retusis, transversim gibbosis, sat profunde punctatis, interstitiis obsolete elevato-reticulatis; margine laterali tenuiter punctato; humeris antrorsum paullo prominulis, apice angulatis, obtusis, dorso carinatis.

Long. $5\frac{1}{2}$ lin.

Hab.—Pebas, Upper Amazons.

Similar in form to the ♀ of *B. truncata*, the shoulders less produced laterally, more obtuse, their anterior margin more distinctly rounded. Elytra deeply punctured, the raised reticulations ill-defined, enclosing small irregular spaces.

Batonota rufo-ornata.

Sub-triangularis, convexa, subtus nigra, nitida, supra obscure nigro-ænea, opaca, pube brevissimâ cinereâ

adpressâ parce adspersa; thorace tenuissime punctato, antice carinato, basi quadri-impresso, antice obsolete rufo marginato; elytris basi retusis, transversim gibbosis, minus profunde substriatim punctatis, vittis elevatis tribus, duabus prope suturam altera prope disci medium positis, postice abbreviatis, inter se ramulis connexis instructis, margine late explanato, parce tenuiter punctato; humeris lateraliter productis, margine antico concavis, apice acutis, dorso carinatis; utrisque plagis duabus, unâ parvâ reticulatâ dorso pone gibbum, alterâ subovatâ submarginali vix ante medium, fulvo-rufis, ornatis.

Long. 6½ lin.

Hab.—Nicaragua.

Very similar in form and sculpture to *B. insidiosa;* the anterior border of the shoulders is more distinctly concave, the dilated limb of the elytra is metallic green beneath, and the fulvo-rufous patch is longer, extending upwards nearly to the base of the limb.

Fam. HISPIDÆ.

Alurnus ornatus.

Subelongatus, niger, nitidus; thorace antice subcylindrico, ad latera et ad basin sat profunde et crebre punctato, sanguineo, margine basali medio paullo dilatato, utrinque abbreviato, punctoque apicali ad marginem adfixo, nigris; elytris oblongis, flavis, apice maculisque tribus utrisque nigris.

Long. 11 lin.

Hab.—Nicaragua.

The antennæ in my specimens are unfortunately broken, but the four lower joints are more slender than in any of the other known species of the genus, the third joint is more than three times the length of the fourth. Thorax much narrower than the elytra, narrowed and subcylindrical in front, transversely convex at the base, basal half and sides coarsely and almost rugosely punctate, middle portion of the anterior disc distantly punctured. Elytra broader and shorter than in *A. d'Orbignyi*, punctured in a similar manner, yellow; their apical fourth, a patch on the humeral callus, a second near the suture

halfway between the base and middle of the disc, and a broad, slightly curved, transverse fascia, placed just below the middle, and abbreviated some distance before reaching either the suture or the outer margin, black.

Eurispa Odewahnii.

Filiformis, subcylindrica, nigra, sub opaca, profunde punctata, albo-squamulosa, abdominis segmentis basi rufo-piceis; capite ante oculos valde producto, thorace cylindrico, pallide rufo-piceo, vittis tribus nigro-fuscis (duabus exterioribus minus distinctis) ornato; elytris sordide albo-fuscis, anguste flavo marginatis, apice productis, utrisque spinâ brevi acutâ desinentibus, elevato-costatis, interstitiis profunde punctato-striatis; unguibus obsoletis.

Long. $3\frac{1}{2}$-4 lin.

Hab.—Gawlor near Adelaide, South Australia.

This species, which was first sent to this country by Mr. Odewahn, may be at once known from *E. albipennis* by the entirely different form of the head; in the insect now described, that portion of the face on which the antennæ are placed, is strongly produced anteriorly and broadly truncate, the eyes being placed laterally halfway between the truncate apex and the thorax. Head coarsely granulose, deeply punctate, the upper surface of the frontal prominence impressed with a deep longitudinal groove. Thorax one-third longer than broad, narrowed from base to apex, sides straight, sinuate just in front of the base, and immediately behind the anterior angle; disc deeply impressed with large round punctures, each one of which (as well as those on the head) is occupied by a single broadly obovate white scale. Scutellum shining, black. Elytra scarcely broader than the thorax, nearly parallel, narrowed at the apex, and produced far beyond the extremity of the abdomen into a distinct tail, the apex of each elytron being still further produced into a short, flat, broad, acute spine; upper surface subcylindrical, deeply striate-foveolate, each puncture being furnished with a single scale, somewhat narrower than those clothing the head and thorax; each elytron with four distinct costæ, the first and fourth unite just before the apex and form a single costa, which runs onwards

until it reaches the apex of the caudal spine ; the second and third unite just below the middle of the elytron, and are continued onwards as a single raised line, which gradually becomes less distinct, and is entirely lost before reaching the point of junction of the first pair. Legs coarsely granulose, clothed, as well as the abdomen, with adpressed obcuneiform scales, those on the tarsi narrow and almost linear.

E. Odewahnii agrees with *E. albipennis* in the total absence (as a separate joint) of the fourth or claw joint of the tarsi; in both species the third is entire, and evidently composed of the third and fourth so closely soldered together, that not the slightest trace of sutural lines is visible even under a powerful lens; the unguiculi are entirely absent. This abnormal form of the tarsus was overlooked by me at the time of publication of the Catalogue of *Hispidæ*; and is, I believe, peculiar to the two above-named insects. I cannot call to mind another instance amongst the extensive tribe of *Phytophaga* in which the claw is not fully developed as a distinct joint of the tarsus.

Eurispa normalis.

Filiformis, subcylindrica, nigra, nitida, albo-squamosa ; capite supra, femoribus tibiisque pallide rufo-piceis, thorace elytrisque sordide albidis; illo crebre foveolato-punctato, fusco-trivittato, vittis duabus exterioribus minus distinctis; his apice attenuatis, utrisque in caudam acutam dehiscentem productis, striato-foveolatis, quadricostatis; capite ante oculos vix producto; unguibus distinctis.

Var. A. Thoracis vittis duabus obsoletis, pedibus nigris.

Long. 3½ lin.

Hab.—Queensland, Moreton Bay.

Body clothed with adpressed, narrow obcuneiform scales, those on the legs, breast, and abdomen nearly linear. Head between the eyes scarcely produced, obtuse; basal half of antennæ obscure rufo-piceous. Thorax about one-third longer than broad, cylindrical, scarcely narrowed anteriorly, sides nearly parallel; surface deeply foveolate-punctate. Elytra subcylindrical, rather shorter and broader than in *E. Odewahnii*, less produced at the apex, the apex of each elytron forming an acute tail;

upper surface sculptured as in the preceding species. Claw large and distinct, articulating freely with the third joint; outer edge of tibiæ stained with black.

E. normalis resembles closely in form *E. albipennis*; it may be known at once from that insect, as well as from *E. Odewahnii*, by the free claw joint.

In the two specimens that I possess of this species, the thorax differs somewhat in form; in one the thorax is distinctly shorter, and the sides are bisinuate; this difference is probably sexual.

Eurispa Howittii.

Filiformis, subcylindrica, nigra, nitida, albo-squamosa; capite ante oculos vix producto, vertice nigro-piceo, pedibus (tarsis exceptis) abdomineque pallide rufo-piceis; thorace elytrisque albo-fuscis; thorace subconico, minus crebre foveolato-punctato, medio vittâ nigro-piceâ ornato, lateribus vix sinuatis, albo-lineatis; elytris subcylindricis, extus albo-limbatis, striato-foveolatis, interstitiis apicem versus subcostatis, apice attenuatis, utrisque in caudam acutam dorso carinatam productis; unguibus distinctis.

Long. $3\frac{2}{3}$ lin.

Hab.—Melbourne.

Body clothed with adpressed, narrow, white obcuneiform scales, those on the legs linear. Thorax nearly a third longer than broad, subconic, sides slightly converging from base to apex, upper surface less closely punctured than in *E. normalis*, lateral border slightly thickened, white. Elytra attenuated at the apex, each produced into a long acute tail; surface deeply striate-foveolate, interspaces behind the middle costate, the costæ uniting near the apex of the elytron into a single strongly raised ridge, which runs along the caudal spine to its apex.

Closely allied to the last described species, differing principally in the more conical and less closely punctured thorax, and in the absence of the elevated costæ on the anterior half of the elytra; it possibly may be a local variety.

XIV. *A Revision of the British Species of* Homalota. By David Sharp, M.B.

[Read 5th April, 1869.]

Having undertaken the revision of the British species of the genus *Homalota*, with a view to the completion, as far as possible, of a list of the native species, I now offer the results of my study in the form of detailed descriptions of all our species. I hope thus to enable such as are willing to give the necessary care to the task to determine their specimens of this most difficult genus.

Mr. Waterhouse's last catalogue contains eighty-nine species of *Homalota;* of these, two find no place in my paper, viz., *H. debilicornis* (to which a ? is attached by Mr. Waterhouse), because I have found no specimen of it extant; and *H. parvula*, which has already been declared by Mr. Waterhouse to be a synonym of another of the species of his catalogue. The present paper contains descriptions of 157 species, of which twenty-nine are considered as previously undescribed.

The length of the descriptive part of this paper is so great, that I must refer the student to the works of Erichson and Kraatz for all generalities with regard to the genus ; for a like reason I have limited the synonymy to the quotation of the original description, and to references to Erichson's "Genera et Species Staphylinorum," to Kraatz's 2nd vol. of the "Insecten Deutschland's," to Thomson's "Skandinavien's Coleoptera," and to Mr. Waterhouse's catalogue.

I must, however, say a few words as to the arrangement I have adopted.

In a genus containing such an inordinate number of species as does the present one,* an arrangement by which it shall be possible to discover the position of a species without wading through an enormous number of unclassified diagnoses, becomes absolutely necessary. Thomson in his Skand. Col. has endeavoured to accomplish this by the division of the genus, as understood by Erichson, by Kraatz, and by Lacordaire, into no less than thirty distinct genera; but the result of his attempt is to much increase, instead of to diminish, the difficulty

* Harold's catalogue gives 412 as the number of described species of the genus, and Stein's recent catalogue of the European species makes their number 230.

of determination of the species. Moreover, the undoubted fact, that the species of the genus are, as a whole, closely allied to one another, is disregarded by his having interposed amongst these divisions a very considerable number of quite alien genera; as an instance of this, *H. incana* is separated from the pretty closely allied *H. nigella* by a crowd of *Fulagriæ*, *Calodercæ*, *Tachyusæ*, *Oxypodæ*, and even *Myllænæ*. I have found myself quite unable to take advantage of Thomson's divisions in any way; but I cannot notice his work, without bearing testimony to the originality, acumen, and zeal, of which it displays abundant marks.

Kraatz has, in the Insecten Deutschlands, proposed a system of arrangement which has been found to be, on the whole, a very serviceable one. I have, therefore, adhered to this in the main; though, as it has seemed to me capable of simplification in some respects, I have introduced considerable modifications. Kraatz's division of the genus into two main groups,—I, with elytra longer than the thorax;—II, with elytra not longer than the thorax—is altogether artificial, and of but little actual use, as the first division contains 136 species, the second only six. I have, therefore, put it entirely on one side, and placed the few species with short elytra in immediate proximity with their respective allies.

Kraatz gives altogether thirteen groups. I propose to amalgamate some of these, and reduce the number of sections to eight, as given hereafter; and, moreover, to arrange the species, in each section, in natural groups, in such cases as I am able to find characters for these. It must be understood, however, that the sections and groups are often apparently but little natural, or characteristic, as regards certain individual species; and that the device is adopted as a mere artificial assistance to study, no actual lines of separation existing in nature between the various groups and sections.

I may add, that I am proposing to attempt something towards the completion of the knowledge of the European species of the genus, if I can obtain the necessary material, and shall feel much obliged to those who will assist me by the communication of specimens.

I have already received the kindest assistance from most of our British entomologists who have collections

of this genus, notably from Messieurs Crotch, Power, Rye, and Waterhouse: while M. Ch. Brisout de Barneville has, by the loan of his types of species recently described by him, rendered me an assistance for which I return him my most sincere thanks: from Messieurs Scriba, Fauvel, Thomson, and others, I have also received important communications, and specimens; and I most cordially thank my friend Mr. G. R. Crotch, of Cambridge, for the zealous assistance he has been able and willing to render me, by means of his extensive relations with European Coleopterists.

I adopt, then, eight sections.

A. Abdomen parallel; thorax quadrate (about as broad as long); the six penultimate joints of the antennæ longer than broad, or nearly as long as broad.

(Contains groups I.—V. Species 1—35).

B. Abdomen parallel; thorax quadrate, or subquadrate; six penultimate joints of the antennæ transverse, but not very strongly so.

(Groups VI. and VII. Species 36—54).

C. Abdomen parallel; thorax quadrate, or subquadrate; six penultimate joints of the antennæ strongly transverse.

(Groups VIII. and IX. Species 55—63).

D. Abdomen parallel; thorax moderately transverse, its sides evenly rounded.

(Groups X.—XII. Species 64—78).

E. Abdomen parallel; thorax distinctly or strongly transverse; penultimate joints of the antennæ not, or but moderately, transverse.

(Groups XIII.—XV. Species 79—107).

F. Abdomen parallel; thorax strongly transverse; penultimate joints of the antennæ strongly transverse.

(Groups XVI and XVII. Species 108—122).

G. Abdomen a little narrowed to the apex; the hinder angles of the thorax well marked: live in ants nests.

(Group XVIII. Species 123—125).

H. Abdomen more or less distinctly narrowed; hinder angles of the thorax rounded.
(Groups XIX.—XXII. Species 126—157).

Section A.

Group I. *Abdomen with the sixth segment nearly impunctate. Male with a tubercle or keel on the upper side of the sixth abdominal segment.* (Species 1—7).

The seven species contained in this group form a really natural and well-defined cluster. *H. languida* is found in marshes, as is also sometimes *H. pavens;* the others occur only on the banks of rivers and lochs.

1. *Homalota currax.*

Depressa, sat lata, nigro-fusca, subtiliter punctata, pedibus obscure testaceis, antennis tenuibus, apicem versus haud incrassatis; thorace basin versus angustato; elytris thorace longioribus; abdomine supra segmentis 2-5 sat dense punctatis, segmento sexto lævigato. Long. 2 lin.

Mas; abdomine segmento sexto dorsali medio ante apicem tuberculo acuto, 7° apice denticulis 4 instructo; segmento 7° ventrali producto.

H. currax, Kr. Ins. Deutsch. ii. 198; Wat. Cat. Brit. Col.

A large, dark species, with slender legs and antennæ, and close and fine punctuation. The antennæ are as long as the head, thorax, and half the elytra, pitchy-black, the basal joints pitchy, slender, not thickened towards the apex, each joint considerably longer than broad, the second and third of about equal length; from the fourth to the tenth each joint slightly shorter than the preceding one; the eleventh joint about half as long again as the tenth, about the length of the first joint. Head black, broad, but evidently narrower than the thorax, with a distinct longitudinal impression on the upper surface; very finely punctured, the palpi pitchy-testaceous. Thorax narrower than the elytra, about as broad as long, the sides rounded in front, then evidently narrowed behind the middle; the base a good deal rounded, so that the posterior angles are very obtuse;

very finely and closely punctured with a central longitudinal channel, beginning at an obscure impression in front of the scutellum, and not reaching to the front of the thorax. Elytra one-third longer, and nearly one-third broader than the thorax, their length about equal to their breadth, closely and very finely punctured. Abdomen with segments 2-5 above distinctly and tolerably densely punctured, sixth smooth and shining. Legs dirty yellow.

The male has on the upper surface of the sixth segment of the abdomen, a large, pointed, keel-like, tubercle before the apex; the hind margin of the seventh segment is furnished with four, small, distinct teeth, two placed very near one another in the middle, and one at each side; between the middle ones and the external ones the margin is very obsoletely crenulate; the under plate of the seventh segment is also narrower, and more prolonged behind than in the female.

A fine and very distinct species, not likely to be confounded with any other. *H. hygrotopora* is somewhat similar in appearance, but has shorter and stouter antennæ, and the thorax scarcely narrowed behind.

Found not uncommonly on the banks of rivers and streams in the North of England and Scotland.

There are specimens of *H. currax* in the British Museum, sent by Dr. Kraatz; they agree entirely with our British ones.

2. *Homalota languida.*

Subdepressa, nigro-fusca, dense subtilissime punctata, antennis abdominisque segmentorum marginibus rufo-fuscis, antennarum basi pedibusque flavis; antennis elongatis, apicem versus lenissime incrassatis; thorace subquadrato, basin versus vix angustato; elytris hoc longioribus; abdomine supra segmentis 2-5 subtiliter confertissime punctatis, sexto læviusculo. Long. $1\frac{3}{4}$-2 lin.

Mas; abdomine segmento sexto supra in medio tuberculo acuto, 7° apice denticulis 6, 4 intermediis approximatis, instructo; segmento 7° ventrali apice medio obtuse angulato.

H. languida, Er. Käf. Brand. i. 318; Gen. et Spec. Staph. 86; Kr. Ins. Deutsch. ii. 213; *Disopora languida,* Th. Sk. Col. iii. 58.

Var.—Minor. (long. 1½ lin.)

H. longicollis, Muls. Op. i. 18; Scriba, Berl. Ent. Zeit. 1866, p. 379.

Variat, colore fere toto testaceo, plus minusve infuscato.

A tolerably large, but rather narrow, species; the antennæ are long, scarcely thickened towards the apex, first, second, and third joints elongate, and of about equal length, the third about half as long again as the fourth: from the fourth to the tenth each joint is a little shorter than the preceding one; the length of each joint is greater than its breadth, eleventh joint about half as long again as the tenth. Head a little narrower than the thorax, with a distinct channel in front (often absent in the small var.); together with the thorax finely punctured and pubescent. Thorax narrower than the elytra, about as long as broad, the sides nearly straight, scarcely at all narrowed behind, thickly and finely punctured, with an obsolete fovea in the middle at the base. Elytra a little longer than the thorax, and redder in colour than it, about as long as broad, thickly and finely punctured. Abdomen with the hind margins of the segments paler; segments 2-5 very densely and finely punctured, the sixth nearly impunctate. Legs yellow.

The male has a distinct tubercle in the middle of the sixth abdominal segment, and the hind margin of the seventh is furnished with six small, but distinct teeth, four placed rather near one another in the middle, and one at each outside; the seventh segment underneath is not rounded at the apex, but pointed, the point being, however, only a very obtuse angle.

This is a very distinct species, and differs from the following by its thorax not narrowed behind, and its very densely punctured abdomen, as also by its different colour, antennæ, &c.

Very rare. I have taken a male specimen at Hammersmith Marshes, and have seen a few others from the neighbourhood of London.

The small var. *longicollis* is also very rare, but has been several times taken near London; Scriba has followed Mulsant in regarding it as specifically distinct; but he has considered the next following species as *H. languida* (I am indebted to him for the inspection of his types); so that his opinion must be put aside.

Specimens of *H. languida*, sent by Kraatz to the British Museum, agree entirely with our British ones.

3. *Homalota insecta.*

Fusco-picea, subdepressa, subnitida, subtiliter punctata, antennarum basi pedibusque testaceis, elytris fuscis; thorace basin versus angustato, medio canaliculato; abdomine supra segmentis 2-5 dense subtiliter punctatis. Long. 2 lin.

Mas; abdomine segmento sexto medio tuberculo acuto, 7° apice denticulis 4 instructo.

H. insecta, Th. Öfv. Vet. Ac. Forh. 1856, p. 93; *Aloconota insecta*, Th. Sk. Col. iii. 8. *H. languida*, Scriba, Berl. Ent. Zeit. 1866, p. 379.

A species nearly as large as *H. currax*, but narrower in proportion to its length than that species. Antennæ pitchy-testaceous, with the base paler; moderately stout, and evidently, though not strongly, thickened towards the apex: first, second, and third joints elongate, of about equal length; fourth to ninth each of about equal length, but each one a little thicker than the preceding, so that though the length of the fourth joint is much greater than its width, the ninth is about as broad as long; tenth scarcely transverse; eleventh oblong-ovate, nearly twice as long as the tenth. Palpi testaceous. Head a little narrower than the thorax, much narrower than the elytra, with a distinct longitudinal impression on the upper surface; finely punctured. Thorax narrower than the elytra, its length about equal to its breadth, the sides rounded in front, then distinctly narrowed from the middle towards the base, thickly and finely punctured, and with a distinct channel along the middle. Elytra narrower at the shoulders than at the apex, a little longer than the thorax, lighter in colour than the head and thorax, thickly and finely punctured. Abdomen with segments 2-5 evenly, and rather densely, and finely, punctured; sixth shining and nearly impunctate, extremity of seventh a little paler. Legs yellow.

The male has a distinct tubercle in the middle of the sixth segment above, and the apex of the seventh segment furnished with four small indistinct teeth, varying in the extent of their development, and sometimes very obsolete.

This species is closely allied to *H. pavens*, Er. It is on the average a little larger, has the head and the thorax more shining and more sparingly punctured, the antennæ not so much thickened towards the apex, and

with the joints longer than in *pavens*. The head and thorax are more distinctly channelled, the thorax rather longer in proportion to its width, and more narrowed behind than in *H. pavens*. I have seen it placed in collections both as *H. languida* and *H. pavens*. It is readily distinguished from *languida* by the thicker joints of the antennæ, the thorax narrowed behind, and the abdomen not so densely punctured.

I have seen no specimen named by Thomson, and have identified the species only by his description. He says (Sk. Col. iii. 9), that the male characters are different from *H. lissonura* (*pavens*, Er.), but as he makes no mention whatever of what these characters are, I fancy the male of *H. insecta* was unknown to him, especially as it is much rarer than the female.

Generally distributed, but uncommon. London, Scotland, Carnarvon.

I possess thirty-two specimens of this species, of which only three are males.

4. *Homalota pavens*.

Linearis, sub-opaca, dense subtiliter punctata, elytris antennisque fuscis, harum basi pedibusque testaceis; thorace subquadrato, basin versus subangustato, obsolete canaliculato; abdomine supra segmentis 2-5 sat dense subtiliter punctatis, 6° lævigato. Long. $1\frac{3}{4}$ lin.

Mas; abdomine segmento sexto medio carinula longitudinali elevata, segmenti apicem fere attingente, segmento 7° apice denticulis 4 instructo.

H. pavens, Er. Käf. Brand. i. 689; Gen. et Spec. Staph. 85; Kr. Ins. Deutsch. ii. 214. *H. quisquiliarum*, Er. Käf. Brand. i. 317; Heer, Faun. Col. Helv. 337. *Aloconota lissonura*, Th. Sk. Col. iii. 9. *H. sulcifrons*, Wat. Cat.

Var.—Elytris thorace fere brevioribus.

Larger than *H. elongatula*, and not so flat and depressed. The antennæ are pitchy testaceous, with the base a little paler, moderately long and stout, a little thickened towards the apex; 1st, 2nd, and 3rd joints moderately long, of about equal length, the fourth joint not much more than one half the length of the third, from the 4th to the 10th each joint is shorter and a little stouter than its predecessor, 4th and 5th longer than

broad, 6-8 about as long as broad, 9 and 10 a little transverse, 11th ovate, acuminate, about twice as long as the tenth. Palpi testaceous. Head a little narrower than the thorax, thickly and finely punctured, with an obsolete fovea in front. Thorax narrower than the elytra, its length about equal to its breadth, the sides a little rounded in front, then slightly narrowed towards the base, densely and finely punctured, with a not very distinct channel. Elytra fuscous, scarcely longer than the thorax, not so long as broad, finely and tolerably densely punctured, the punctuation not so dense as on the thorax. Abdomen with segments 2-5 thickly and finely punctured, 6th nearly impunctate. Legs yellow.

The male has an elongate raised tubercle on the upper side of the sixth abdominal segment, which reaches nearly to the apex, and the hind margin of the seventh segment is armed with four indistinct teeth.

Not common. Nithsdale, Rannoch, Edinburgh, Brighton. The male is much rarer than the female.

I have a small variety found in Nithsdale, in which the elytra are not quite so long as the thorax.

Obs.—In the Brit. Mus. are four specimens of *H. pavens* sent by Dr. Kraatz; these agree with the examples just described. It is, I believe, the *H. sulcifrons* of Mr. Waterhouse's Catalogue, but I cannot say with certainty whether it is Stephens' *Aleochara sulcifrons*. His name would appear to point rather to *H. insecta*.

5. *Homalota Eichoffi.*

Depressa, nitidiuscula, nigro-fusca, antennis elytrisque fuscis, pedibus testaceis, subtiliter haud confertim punctata; capite subtriangulari, antennis tenuibus, apicem versus vix incrassatis; thorace subquadrato, postice subangustato; elytris hoc paullo longioribus; abdomine supra segmentis 2-5 subtiliter minus crebre punctatis, segmento sexto fere lævigato. Long. $1\frac{1}{2}$ lin.

Mas; abdomine segmento sexto supra medio tuberculo acuto; 7° apice medio denticulis 2, lateribus utrinque denticulo singulo obsoleto, instructo.

H. Eichoffi, Scriba, Berl. Ent. Zeit. 1867, p. 390.

A delicate fragile species allied to *H. cambrica, (velox,* Kr.). Pitchy, shining, the antennæ, legs, and elytra

paler; antennæ rather long and slender, a little thickened towards the apex, third joint not quite so long as the second, about twice as long as the fourth, fourth not so long as fifth, 5-10 differing little in length, the 5th distinctly, the 10th scarcely, longer than broad, eleventh oval, half as long again as the tenth. Head large, a little narrower than the thorax; shining, narrowed in front, with an indistinct impression between the eyes, very finely punctured. Thorax but little narrower than the base of the elytra, its length about equal to its breadth, the sides a little narrowed towards the base; very finely and pretty densely punctured, with a short channel or impression, in front of the scutellum. Elytra scarcely longer than the thorax, narrower at the base than at the apex, their length not quite so great as their width; their punctuation not quite so fine as that of the thorax. Abdomen somewhat narrowed towards the apex, segments 2-4 above finely and rather sparingly punctured, the fifth segment not quite so thickly punctured, 6th almost impunctate. Legs yellow.

In the male the 6th abdominal segment is furnished above with a distinct pointed tubercle, and the posterior margin of the seventh with four teeth, two distinct ones placed close together in the middle, and an obsolete one on each side.

Distinguished from *H. cambrica*, by being rather larger, more shining, with a differently shaped head, by its rather stouter antennæ, and by its shorter and paler elytra.

Found by Mr. Crotch and myself on the borders of Loch Rannoch in Perthshire, May, 1866.

Obs.—Judging from description only, this species must be allied to *H. debilicornis*, Er., Kr., which species is placed as British in Mr. Waterhouse's Catalogue, but as I have never seen a British specimen, and there was probably a mistake in the determination, the name must be erased from our Catalogue.

6. *Homalota cambrica.*

Depressa, vix nitida, dense subtilissime punctata, antennis elytrisque fuscis, pedibus testaceis; antennis tenuibus; thorace subquadrato, postice vix angustato; elytris hoc fere sesqui longioribus; abdomine supra segmentis 2-5 subtiliter sat crebre punctatis, segmento sexto lævigato. Long. $1\frac{1}{3}$ lin.

Mas; abdomine segmento sexto supra medio tuberculo acuto; segmento 7° margine posteriore medio denticulis 2, utrinque denticulo obsoleto instructo.

H. cambrica, Wollaston, Zoologist, 1855, App. p. ccv. *H. velox*, Kr. Ins. Deutsch. ii. 201.

Var.—Capite antice foveolato.

A delicately formed species, somewhat like *H. gregaria*, but much smaller and more fragile. Antennæ slender, longer than the head and thorax, scarcely at all thickened towards the apex, pitchy or pitchy testaceous, joints 1, 2, 3 moderately long, of about equal length, the 3rd about half as long again as the fourth, 4-10 differing but little in length, each longer than broad, eleventh oblong, about half as long again as the tenth. Head subquadrate, a little narrower than the thorax, finely punctured. Thorax about as long as broad, scarcely narrowed behind, a little narrower than the elytra, thickly and very finely punctured. Elytra a little paler in colour than the head and thorax, longer by a half than the latter, their length greater than their width, very thickly and finely punctured. Abdomen with segments 2-5 finely, but not very densely punctured, the sixth nearly impunctate. Legs slender, yellow.

In some examples the head has a fovea in front, and the thorax is more or less distinctly channelled. Also in some specimens, each elytron has a distinct impression near the apex; the antennæ also are a little more thickened towards the apex in some specimens, than in others.

The male has a large raised tubercle on the middle of the upper surface of the sixth segment of the abdomen, and the apex of the seventh segment is furnished with four teeth, two small distinct ones placed together in the middle, and a scarcely visible one on each side; moreover the hind margin of the seventh segment underneath takes the form of an obtuse angle in the male, while it is gently rounded in the female.

Common amongst the shingle on the banks of the Scotch rivers, also in Wales.

Obs. I.—In the British Museum are specimens of *H. velox* sent by Dr. Kraatz; these agree with the species I am at present considering.

Obs. II.—Mr. Wollaston's description of *H. cambrica*, (*loc. cit.*) evidently refers to an immature form of this species; one of the examples there described is now in

Mr. Crotch's collection, and is undoubtedly an immature female of *H. velox*, Kr. Moreover the locality where it was taken (Bettws-y-coed) has since produced *H. velox* commonly, and no other species to which Mr. Wollaston's description could be applied. Hence, as the name *H. cambrica* is anterior to Kraatz's by two years, I have adopted it.

7. *Homalota planifrons.*

Subdepressa, subnitida, nigro-fusca, antennis elytrisque fuscis, pedibus testaceis; subtiliter haud confertim punctata; antennis apicem versus paullo incrassatis, articulis penultimis subtransversis, capite subtriangulari; thorace subquadrato, postice subangustato; elytris hoc paullo longioribus; abdomine supra segmentis 2-4 subtiliter, haud crebre punctatis, segmento quinto parcius punctato. Long. 1½ lin.

Mas; abdomine segmento sexto supra medio tuberculo acuto, 7° apice denticulis quatuor, instructo.

H. planifrons, Wat. Proc. Ent. Soc. Lond. 1863, p. 150. (*H. platycephala*, errore).

About the size and appearance of *H. gregaria*, but more shining and more sparingly punctured. Antennæ of moderate stoutness, but little thickened towards the apex; joints 1-3 of about equal length, 4 shorter than 5, only about half as long as 3, 5-10 differing little in length, the first of them a little longer, the last of them a little shorter than broad, eleventh joint ovate, half as long again as the tenth. Head a little narrower than the thorax, subtriangular, narrowed in front, with a distinct channel on the upper side; sparingly and finely punctured. Thorax narrower than the elytra, about as long as broad, a little narrowed behind, pretty densely and finely punctured, with a distinct channel or impression along the middle. Elytra paler in colour than the head and thorax; a little longer than the latter, finely and somewhat sparingly punctured. Abdomen with segments 2-4 finely but not densely punctured; fifth segment rather more sparingly punctured than the fourth, sixth nearly smooth. Legs testaceous.

The male has the sixth segment of the abdomen furnished on the upper side, in the middle, with a distinct acute tubercle, and the posterior margin of the seventh

segment with four teeth; two placed close together in the middle, and one at the outside of the segment on each side.

This species resembles *H. Eichoffi* in the shape of the head, but is less depressed, and more robust than that species; the antennæ are not so slender, and are more thickened towards the apex, and the punctuation is more sparing. From *H. gregaria*, which it resembles in size and appearance, *H. planifrons* may be distinguished by its head narrowed in front, its more sparingly punctured upper surface, and the male characters. It also resembles *H. elongatula* somewhat, but has a differently shaped head, the thorax narrowed behind, and different male characters.

Found in the neighbourhood of London, but apparently very rare. I have seen only five specimens of it, and of these but one is a male.

Group II. *Small, delicate species, with all the segments of the abdomen punctured; antennæ not at all thickened towards the apex.* (Species 8—12).

The five species of this group are all found under stones on the banks of rivers, and nowhere else; they form a well-defined and natural group, with the exception that in *H. subtilissima* the structure of the antennæ is somewhat different from that of the other species.

8. *Homalota eximia.*

Depressa, nigro-fusca, elytris fuscis, ore, antennis, pedibus, anoque testaceis, dense subtilissime punctata; antennis gracillimis, apicem versus haud incrassatis; capite thoraceque canaliculatis, hoc subquadrato, basin versus paulo angustato; elytris thorace longioribus; abdomine supra crebre æqualiter punctato. Long. 1 lin.

Mas; antennis paulo longioribus, abdomine segmento 7° ventrali longe producto.

Fem.; abdomine segmento 7° ventrali apice medio leviter emarginato.

H. fragilicornis, Wat. Cat. (Kr. ? ?).

About the size and build of *H. fragilis*, Kr. Antennæ slender, elongate, entirely yellow, not at all thickened

towards the apex, each joint with the length very distinctly greater than the breadth; joint three a little shorter than two; four about half as long as two; five half as long again as four; five to eleven differing but little in length and breadth, the eleventh being only a little longer than the tenth. Palpi and mouth yellow. Head scarcely narrower than the thorax, slightly narrowed in front, with a distinct channel, closely and very finely punctured. Thorax a little narrower than the elytra, its length almost as great as its width, gently narrowed behind, closely and finely punctured, with a distinct longitudinal channel. Elytra fuscous, paler towards the apex, about one-third longer than the thorax, closely and very finely punctured. Abdomen blackish, with the extremity yellowish, its punctuation not so fine and dense as that of the thorax and elytra, but the segments above are finely and pretty closely punctured, the punctuation on the sixth segment being a little more sparing than on the others. Legs testaceous, with the tarsi comparatively short and stout.

In the male, the joints of the antennæ are a little longer than in the female; and the ventral plate of the seventh segment of the abdomen is very much produced, it is also very broad, and not narrowed towards the apex, which is truncate, with the apical angles rounded.

This species is allied to *H. fragilis*, but is lighter in colour, with longer joints to the antennæ, the head a little broader behind the eyes, &c. It is the *fragilicornis* of Mr. Waterhouse's catalogue, but I cannot make up my mind that it agrees sufficiently with Kraatz's description of that species.

On the banks of the Scotch rivers, but very rare. Found at Peebles, the Nith at Thornhill and Dumfries, the Almond near Edinburgh.

9. *Homalota fragilis*.

Depressa, nigra, confertim subtilissime punctata, antennis elytrisque fuscis, pedibus testaceis; antennis apicem versus haud incrassatis, capite fere quadrato, foveolato; thorace subquadrato, elytris paulo angustiore, leviter canaliculato; elytris hoc tertia parte longioribus; abdomine supra segmentis 5 anterioribus crebre subtiliter punctatis, sexto sparsius punctato. Long. 1 lin.

Mas; abdomine segmento 7° ventrali paulo elongato, apice rotundato.

Fem.; abdomine segmento 7° ventrali apice medio leviter emarginato.

H. fragilis, Kr. Stet. Ent. Zeit. xv. 125; Ins. Deutsch. ii. 223; Wat. Cat.

Var.—Thorace medio late impresso.

Black, with the elytra pitchy-black, and the legs testaceous; antennæ pitchy, slender, not thickened towards the apex, the length of each joint greater than its breadth; second and third joints of about equal length; four to ten differing but little from one another in length, eleventh about a third longer than the tenth. The head is a little narrower than the thorax, nearly square, with a distinct channel, or fovea; thickly and finely punctured. Thorax somewhat narrower than the elytra, its length nearly as great as its breadth, a little narrowed behind, thickly and very finely punctured, with a channel along the middle, beginning from an obscure impression behind. The elytra are slightly paler in colour than the head and thorax, fully one-third longer than the latter, densely and very finely punctured. The abdomen is black, its punctuation not so fine or dense as that of the fore parts; segments two to five are thickly and finely punctured; sixth segment more sparingly punctured than the fifth.

In the male, the under plate of the seventh abdominal segment is a little more produced than the upper plate, and has its posterior margin rounded. In the female, the seventh under plate is gently emarginate in the middle.

This species is very abundant on the banks of the rivers and streams everywhere in Scotland.

A variety occurs in which the thorax has a broad longitudinal impression along the middle; some examples are also darker in colour than the type, and have the legs nearly black.

10. *Homalota longula.*

Depressa, nigra, confertissime subtilissimeque punctata, antennis tenuibus, apicem versus haud incrassatis, fuscis, pedibus piceo-testaceis; capite quadrato, obsolete impresso; thorace subquadrato, canaliculato, basin versus

vix angustato; elytris thorace tertia parte longioribus; abdomine supra toto confertissime subtilissimeque punctato. Long. 1 lin.

Mas; abdomine segmento 7° ventrali paululum producto apice rotundato.

Fem.; segmento 7° ventrali apice rotundato.

H. longula, Heer, Faun. Col. Helv. 334. *Hydrosmecta longula,* Th. Sk. Col. iii. 13.

Size and form of *H. fragilis.* Antennæ pitchy, slender, not thickened towards the apex, each joint longer than broad, joint two longer than three, four shorter than three, five to ten differing but little in length, eleventh rather longer than the tenth. Head a little narrower than the thorax; nearly square, not narrowed in front; thickly and very finely punctured, with a more or less obsolete impression on the middle. Thorax a little narrower than the elytra, its length about equal to its breadth, scarcely narrowed behind; with a not very distinct longitudinal channel; closely and very finely punctured. The elytra are fully one third longer than the thorax, and are also very densely and very finely punctured. The whole of the upper surface of the abdomen is very densely and finely punctured.

The male is not easy to distinguish from the female, the only difference being that the ventral plate of the seventh segment of the abdomen is a little narrowed, and more produced than in the female.

Rare. I have found it on the banks of a tributary of the Nith, near Dumfries, and also on the banks of the Bowmont at Yetholm; a few specimens were also formerly taken by Mr. Wollaston at Slapton Ley.

This species is very like *H. fragilis,* but is easily distinguished by its much more densely and finely punctured abdomen, and its darker colour.

Obs.—This species accords sufficiently well with Heer's description of *H. longula.* Kraatz's *thinobioides* is generally supposed to be synonymous with *H. longula,* Heer, but I cannot find that Kraatz's description agrees accurately with my specimens; moreover two examples of *H. thinobioides* sent by Kraatz to the British Museum, are specifically distinct from the present species. Mr. Wollaston's *H. thinobioides* from Madeira, is also a different species from the present one, having its head nar-

rowed in front, and paler legs, &c. I cannot say, however, that the insect from Madeira agrees with the specimens of *thinobioides* from Kraatz in the British Museum, not having had an opportunity of comparing them.

11. *Homalota delicatula.*

Linearis, depressa, fusca, elytris dilutioribus, antennis pedibusque testaceis, supra dense subtilissime punctata; antennis elongatis, apicem versus haud incrassatis; abdomine supra dense subtilissime æqualiter punctato. Long. $\frac{3}{4}$ lin.

Very much of the size and appearance of *H. subtilissima*, but really allied to *H. longula*, of which, however, it is only one-half the size. Fuscous, with the elytra paler, the antennæ and legs testaceous. Antennæ nearly as long as the head, thorax, and elytra; not thickened towards the apex, the length of each joint greater than the breadth, joint two longer than three, four shorter than three, five to ten differing little in length, the eleventh oblong, about one-third longer than the tenth. Head subquadrate, scarcely narrower than the thorax, very little narrowed in front, densely but very finely punctured. Thorax scarcely narrower than the elytra, its length about equal to its breadth, a little narrowed behind, densely and very obsoletely punctured. Elytra paler than the head and thorax, one-third longer than the latter, very densely and finely punctured. Abdomen with all the segments above equally densely and very finely punctured. Legs pale testaceous.

I have not been able clearly to distinguish the male from the female; probably the differences are the same as in *H. longula*. In some examples, the head and thorax are channelled, in others not.

Extremely rare. Found by me on the banks of the Nith, at Thornhill, and by Mr. Crotch, at Rannoch.

Obs.—This species can only be confounded with *H. subtilissima* or *H. longula;* from the former, its long antennæ and densely punctured abdomen readily distinguish it. It is only half the size of *H. longula*, is of a much paler colour, and the punctuation of the abdomen is not quite so dense and fine.

12. *Homalota subtilissima.*

Linearis, subdepressa, fusca, thorace elytrisque dilutioribus, antennis pedibus anoque testaceis; antennis apicem versus haud incrassatis; thorace subquadrato, canaliculato; elytris hoc longioribus; abdomine supra æqualiter subtiliter sat confertim punctato. Long. $\frac{3}{5}$ lin.

Mas; abdomine segmento 7° ventrali paululum producto.

H. subtilissima, Kr. Stet. Ent. Zeit. xv. 126; Ins. Deutsch. ii. 230.

Var.—Thorace haud vel vix canaliculato.

A very small species, of delicate formation and colouring. Antennæ testaceous, moderately stout, but not thickened towards the apex; joints one and two rather stout, and of moderate length; three not much more than half as long as two, much narrowed at the base; four shorter than three, subquadrate; five a little longer and stouter than four; five to nine differing little from one another in length and breadth, each one distinctly narrowed towards the base, the length of each very nearly as great as the breadth; ten rather longer than nine, the eleventh joint half as long again as the tenth. Head subquadrate, with a distinct impression above, very finely and pretty densely punctured. Thorax rather wider than the head, and a little narrower than the elytra; its length about equal to its breadth, a little narrowed behind, with a longitudinal channel in the middle, extremely finely and pretty closely punctured. Elytra lighter in colour than the head and thorax, and not so shining; fully one-third longer than the thorax, densely and very finely punctured, the punctuation denser than on the rest of the upper surface. Abdomen with all the segments on the upper side finely and tolerably closely punctured, the punctuation of the terminal segments being rather more sparing than that of the basal ones, its apex testaceous. Legs yellow.

In the male, the seventh abdominal segment underneath is rather more produced than in the female, and its hind margin is rather more rounded.

Common on the banks of the Scotch rivers; it is found in company with *Thinobius linearis,* which it resembles greatly in colour and appearance.

Obs.—This species has very much the structure of *H. elongatula* and its allies; but its very small size, and its facies, associate it rather with the foregoing species. My specimens agree entirely with examples of *H. subtilissima*, sent by Kraatz to the British Museum.

Group III. *Species of moderate size, with all the segments of the abdomen punctured, and the antennæ slightly thickened towards the apex.* (Species 13—19).

The species forming this group have much the habits of the members of the genus *Tachyusa*, and are to be found running about in company with them in muddy places, in marshes, on the banks of rivers, and on the coast. The species differ a good deal in appearance. *H. plumbea* has been described as an *Aleochara;* it has much the colour and appearance of *Aleochara grisea* and its allies, in company with which it is found. *H. fallax* approaches very closely to *Oxypoda*.

13. *Homalota littorea.*

Nigra, antennis elytris anoque fuscis, pedibus fusco-testaceis; antennis apicem versus leviter incrassatis; capite subrotundato, thorace evidenter angustiore; thorace longitudine latitudine breviore; elytris hoc tertia parte longioribus, cum capite thoraceque subtiliter confertim punctatis; abdomine supra dense æqualiter minus subtiliter punctato. Long. $1\frac{1}{4}$ lin.

Mas; abdomine segmento 7° ventrali evidenter producto, angusto, apice rotundato.

Fem.; segmento 7° ventrali latiore, apice medio vix evidenter emarginato.

H. fluviatilis, Wat. Cat. (Kr. ? ?).

A rather shining and but little depressed species. Antennæ pitchy, with the basal joint a little paler; longer than the head and thorax, moderately stout, a little thickened towards the apex; first and second joints moderately long and stout; third a little shorter than the second, narrowed towards the base; fourth shorter than third; four to ten differing but little from one another in length, the first of them distinctly longer than broad, the last of them about as long as broad; eleventh joint

ovate, nearly twice as long as the tenth. Head much smaller than the thorax, not much more than half the width of the elytra, obsoletely and not very closely punctured. Thorax distinctly narrower than the elytra, a little shorter than broad, a little narrowed behind, with an indistinct fovea in the middle of the base; densely and very finely punctured, and with extremely delicate pubescence. Elytra lighter in colour than the head and thorax, about one-fourth longer than the latter; their breadth rather greater than their length, densely and finely punctured, and delicately pubescent. The abdomen is black, and rather shining, with the apex lighter in colour; all the segments are thickly and equally punctured, the punctuation and pubescence being much coarser than on the front parts of the body. The legs are dirty yellow.

In the male, the under plate of the seventh abdominal segment is considerably produced, and narrower than in the female. In the female, the hind margin of the same plate, as well as being broader than in the male, is in the middle very gently emarginate.

Rare. I have found it in muddy places, on the sea shore, at Deal and Brighton, and it has been taken in other localities; always on the sea shore.

H. littorea is best compared with *H. luteipes*, than which it is rather smaller; the antennæ are shorter, the thorax is much shorter and broader, and the punctuation of the abdomen is a little coarser and more sparing.

Obs.—The above is the insect referred to as possibly *H. fluviatilis*, Kr. (in Proc. Ent. Soc. Lond. 1858, p. 16.) by Mr. Waterhouse; but it conforms neither with Kraatz's description, nor with specimens of *H. fluviatilis*, sent by Kraatz to the British Museum. Moreover, I have seen a specimen which has been sent to Dr. Kraatz, and returned by him marked "H. nov. spec., ex affinitate *H. elongatula*."

14. *Homalota imbecilla.*

Depressa, nigro-fusca, antennis ore ano pedibusque testaceis, elytris ferrugineis; antennis elongatis, apicem versus vix incrassatis; thorace transversim subquadrato; elytris hoc paulo longioribus; abdomine supra toto confertim evidenter punctato. Long. $1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° ventrali producto, apice rotundato.

Fem.; segmento 7° ventrali apice medio emarginato.

H. imbecilla, Wat. Proc. Ent. Soc. Lond. 1858, p. 16.

A moderate-sized, depressed, rather brightly coloured species. The antennæ are much longer than the head and thorax, moderately stout, scarcely at all thickened towards the apex, the length of each joint greater than its breadth; first joint rather stout; two and three more slender than it, of about equal length; four shorter than three, five rather longer than four; five to ten differing but little from one another in length and breadth, the length of each distinctly greater than its breadth; eleventh joint oblong-ovate, elongate, quite as long as the two preceding joints together. Head nearly black, suborbiculate, a little narrowed in front, narrower than the thorax, finely but not densely punctured. Thorax pitchy-black, narrower than the elytra, a little broader than long, slightly narrowed behind, finely and rather densely punctured, and with an obsolete impression behind. Elytra a little longer than the thorax, their length scarcely equal to their breadth, thickly and not altogether finely punctured. Abdomen with distinct and not very fine pubescence, all the segments pretty densely and finely punctured, the sixth segment, however, rather more sparingly than the anterior ones, the seventh segment, and hind part of the sixth, reddish-yellow. Legs yellow.

In the male, the under plate of the seventh segment of the abdomen is considerably produced, and its hind margin gently rounded, while in the female it is broadly and distinctly emarginate.

Found rarely, under sea-weed, in various parts of the south of England, Brighton, Lymington, Chatham.

Obs.—This species occurs in various parts of France, and is generally called *meridionalis*, Muls., which is, however (according to Kraatz) a darker coloured species with shorter penultimate joints to the antennæ, &c. M. Brisout de Barneville has forwarded me a specimen taken at Hyères, with the remark, that it is stated by Kraatz to be "pas *meridionalis*, Muls."

15. *Homalota luteipes.*

Nigra, antennis elongatis piceis, elytris ferrugineis, pedibus testaceis; capite angusto; thorace subquadrato,

postice haud angustato; elytris hoc paulo longioribus; abdomine supra æqualiter dense subtiliter punctato. Long. $1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° ventrali paululum producto; capite evidenter feveolato.

Fem.; segmento 7° ventrali apice medio anguste sed distincte exciso.

H. luteipes, Er. Käf. Brand. i. 320; Gen. et Spec. Staph. 88; Kr. Ins. Deutsch. ii. 224; Wat. Cat. *Dilacra luteipes,* Th. Sk. Col. iii. 32.

Somewhat like a small *H. elongatula,* but not so depressed, and narrower in front. Antennæ pitchy, elongate, rather slender, slightly thickened towards the apex; joints two and three of about equal length, slender; four much shorter than three, five longer than four; five to ten differing but little in length, and each very slightly broader than the preceding one, none of the joints transverse; eleventh joint rather long, ovate, half as long again as the tenth. Head narrower than the thorax, not much more than half the breadth of the elytra, with a fovea in the middle, indistinct in the female, distinct in the male, finely and pretty densely punctured. Thorax narrower than the elytra, subquadrate, its length about equal to its breadth, not narrowed behind, even a little narrowed towards the front, closely and finely punctured, not channelled, with a very small and indistinct fovea in front of the scutellum. Elytra ferruginous, darker towards the base; a little longer than the thorax, closely and finely punctured. All the segments of the abdomen above are very closely and finely punctured, the sixth not at all more sparingly than the others. The legs are bright yellow.

In the male the antennæ are a little more slender than in the female; the fovea on the head is more distinct, and the seventh segment of the abdomen underneath is a little produced, with its apex rounded; while in the female the hind margin of this segment is, in the middle, narrowly but distinctly emarginate.

Rare. Horning and Hammersmith.

Obs.—The dense punctuation of the abdomen, together with the structure of the head and thorax, easily distinguish this from all other species. Thomson remarks that it bears a little resemblance to *Oxypoda longiuscula.* Specimens sent by Kraatz to the British Museum agree entirely with our English ones.

16. *Homalota labilis.*

Nigra, nitida, antennis piceis, pedibus testaceis, femoribus infuscatis; antennis apicem versus paulo incrassatis; thorace subquadrato, cum capite elytrisque subtiliter sat confertim punctato; abdomine supra æqualiter confertim subtiliter punctato. Long. $1\frac{1}{3}$-$1\frac{1}{2}$ lin.

Mas; capite impresso, abdomine segmento 7° ventrali evidenter producto, angusto, apice rotundato-ovali.

Fem.; segmento 7° ventrali apice medio obsolete, vix evidenter, emarginato.

H. labilis, Er. Käf. Brand. i. 699; Gen. et Spec. Staph. 88; Kr. Ins. Deutsch. ii. 226; Wat. Cat. *Gnypeta labilis,* Th. Sk. Col. iii. 7.

Var.—Robustior, pedibus nigris, genubus tarsisque testaceis.

H. cærulea, Wat. Cat.

A black and very shining species. Antennæ of moderate length and thickness, a little thickened towards the apex; pitchy, sometimes paler at the base; second and third joints rather long, third nearly as long as the second; five to ten differing but little in length; the first of them a little longer than, the last of them scarcely so long as, broad; eleventh about half as long again as the tenth. Head but little narrower than the thorax, extremely finely, but pretty densely punctured. Thorax considerably narrower than the elytra; a little narrowed behind, its length about equal to its breadth, with an impression in front of the scutellum; extremely finely and tolerably densely punctured. Elytra about a fourth part longer than the thorax; very finely and pretty densely punctured. Abdomen with all the segments above densely and finely punctured; the sixth not more sparingly than the others; both the punctuation and pubescence are more distinct than those of the fore parts. The legs are yellowish, with the thighs (and the tibiæ more or less) infuscate.

In the male the head has a distinct impression on the upper surface, and the seventh abdominal segment underneath is narrow, and distinctly produced.

Common on the muddy banks of rivers and ponds. It runs with great rapidity in the warm sunshine of spring days.

Obs.—The variety with black legs is also generally larger, broader, and more robust. The species also varies a good deal in the thickness of the antennæ.

17. *Homalota carbonaria.*

Cæruleo-nigra, subnitida, tarsis nigro-testaceis, confertim subtilius punctata, fronte impressa; abdomine supra undique æqualiter confertissime punctato. Long. 1½ lin.

Mas; abdomine segmento 7° ventrali paulo angustiore et magis producto.

Fem.; abdomine segmento 7° ventrali apice rotundato-truncato.

Tachyusa carbonaria, Sahl. Ins. Fenn. i. 351. *T. cærulea*, Sahl. *l. c.* *H. ripicola*, Kies. Stet. Ent. Zeit. v. 317; Kr. Ins. Deutsch. ii. 227.

This species is so closely allied to *H. labilis*, that it is sufficient to point out the characters which distinguish it from that common species. *H. carbonaria* is rather larger, of a distinct blue colour, with the legs and antennæ entirely blue-black, except that the tarsi, and a small spot at the knees, are dusky testaceous; the head has a distinct impression in both sexes, and the upper surface is not so shining as in *H. labilis*.

Very rare. I have found it in company with *Tachyusa chalybea* (which it resembles in colour) on the banks of the Nith, and it occurs also, I believe, on the banks of the Trent.

Obs.—This species is generally represented in British collections by dark coloured robust varieties of *H. labilis*.

18. *Homalota plumbea.*

Plumbeo-nigra, sub-opaca, confertissime subtilissimeque punctata, undique densius griseo-pubescens, antennis piceis, pedibus fusco-testaceis; antennis apicem versus vix incrassatis; thorace subquadrato, coleopteris multo angustiore; abdomine æqualiter confertissime subtilissimque punctato. Long. 1½ lin.

Mas; abdomine segmento 7° supra et infra apice rotundato.

Fem.; abdomine segmento 7° supra obsolete, infra late sed evidenter, emarginato.

H. plumbea, Wat. Proc. Ent. Soc. Lond. 1858, p. 15.

Black; but the whole body covered with a short dense pubescence, giving it a gray appearance. Antennæ rather slender and moderately long, but little thickened towards the apex; pitchy; joint three considerably shorter than two, four shorter than three, four to ten each differing but little in length and breadth, the first of them a little longer than broad, the last scarcely so long as broad; eleventh joint rather stout, about twice as long as the tenth. Head small, narrower than the thorax, only about half the width of the elytra; narrowed behind the eyes; very closely and finely punctured; covered with a short, fine, and dense pubescence. Thorax subquadrate, nearly as long as broad; much narrower than the elytra; a little narrowed behind, with a broad shallow impression in the middle before the base; densely and finely punctured, and pubescent. The elytra are broad, rather broader than long; nearly one-third longer than the thorax; like it very densely punctured and pubescent. The abdomen is not quite so dull as the fore parts; all the segments very densely and finely punctured, and covered (except at the extreme base of each segment, which is rather shining) with a depressed pubescence. The legs are testaceous, more or less infuscate; the tarsi rather short and stout.

The sexes are easy to distinguish, but I am not quite certain which is the male; in that which I suppose to be the male, both the upper and lower plates of the seventh segment of the abdomen have the hind margin gently rounded; while in the other sex, the hind margin of the same segment is obsoletely emarginate above, and more evidently so on the underside. The antennæ are a little longer in this sex, so that it may perhaps prove to be the male.

Local: in chalky places on the coast, under seaweed; when found, generally in numbers. Brighton, Seaford, Weymouth.

Obs.—This is a remarkable species, not readily to be confounded with any other; the dense pubescence with which it is covered, giving it a peculiar grayish appearance; the thorax, much narrower than the elytra, is also remarkable.

19. *Homalota fallax.*

Linearis, opaca, omnium subtilissime confertissimeque punctata, pube brevissima densius vestita, nigra, elytris ferrugineis, antennis fusco-testaceis, pedibus testaceis; antennis apicem versus vix incrassatis; capite thoraceque elytris vix angustioribus; thorace subquadrato; elytris hoc paulo longioribus; abdomine opaco, undique subtilissime confertissimeque punctato. Long. $1\frac{1}{4}$-$1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° ventrali angustiore, et magis producto.

Fem.; abdomine segmento 7° ventrali apice, supra et infra, rotundato.

H. fallax, Kr. Ins. Deutsch. ii. 227.

A remarkable species; its punctuation and pubescence being rather those of an *Oxypoda* than a *Homalota*. Antennæ moderately stout, scarcely thickened towards the apex; third joint a little shorter than the second; four to ten differing but little from one another in length, but each one slightly broader than the preceding; the first of them distinctly, the last of them scarcely, longer than broad; eleventh joint not quite twice as long as the tenth. Head but little narrower than the thorax, a little broader behind the eyes, extremely densely and finely punctured. Thorax scarcely narrower than the elytra, subquadrate; a little broader than long, scarcely narrowed behind, with a shallow impression in the middle in front of the base, from which proceeds a very indistinct channel; extremely densely and finely punctured. Elytra but little longer than the thorax, lighter in colour than it and the head, brownish, darker towards the base, their length scarcely so great as their width, very densely and finely punctured. The abdomen is very dull; all the segments extremely densely and finely punctured, and entirely covered with a very short dense pubescence; the posterior margins of the segments and the anus brownish. Legs reddish-testaceous, the posterior tarsi long and slender, their basal joint being nearly twice as long as the second.

In the male, the under plate of the seventh segment of the abdomen is much narrower, and is more produced than in the female.

The only locality I know for this remarkable species is Hammersmith Marshes, near London; where it was formerly not uncommon among dead leaves in winter and spring.

Obs. I.—The punctuation and pubescence of this species are entirely those of an *Oxypoda,* to which genus it approaches, moreover, in the structure of its posterior tarsi.

Obs. II.—Kraatz says that *H. fallax* is found exclusively on the coast; this would raise a suspicion that his species is not the same as the one I have described above. I have never seen a foreign example of *H. fallax,* Kr., but can find no discrepancy between Kraatz's description and my numerous specimens from Hammersmith. I am not aware that the species has ever been found on the coast in this country.

Group IV. *Male without tubercle or keel on the sixth segment; abdomen with the sixth segment nearly impunctate, the others pretty closely punctured, the fifth often more sparingly than the fourth.* (Species 20—27).

A natural group, the species of which live among moss and leaves, in damp, and sometimes in muddy places. *H. elongatula* is often found in great numbers, running on the banks of rivers and ponds.

20. *Homalota luridipennis.*

Lata, sat depressa, nigro-fusca, antennarum basi elytris pedibus anoque testaceis, abdominis segmentorum marginibus ferrugineis, confertim subtiliter punctata; thorace transversim subquadrato; abdomine supra segmentis 2-4 confertim subtiliter punctatis, 5° sparsim punctato, 6° fere lævigato. Long. 2 lin.

Mas; abdomine segmento 7° dorsali apice medio leviter emarginato, ventrali recurvo, valde triangulariter producto, apice ipso emarginato-truncato.

Fem.; segmento 7° dorsali apice medio obsoletissime emarginato, ventrali apice rotundato.

Bolitochara luridipennis, Man. Précis, p. 77; *H. luridipennis,* Kr. Ins. Deutsch. ii. 221; *Atheta producta,* (Muls.), Th. Sk. Col. iii. 66.

A large, broad, rather dull, and depressed species. Antennæ moderately long and stout, a little thickened towards the apex, fuscous, with the base lighter; joints

two and three of about equal length, four to ten differing little from one another in length, but each one a little stouter than its predecessor, the first of them longer than broad, the last of them scarcely so long as broad; eleventh joint half as long again as the tenth. Palpi testaceous. Head broad, rounded, a little narrower than the thorax, closely and finely punctured, the vertex flattened in the male. Thorax a little narrower than the elytra, about one-third broader than long, scarcely at all narrowed behind; its disc flat, with an indistinct impression in the middle in front of the base, closely and finely punctured. The elytra are yellowish, about one-third longer than the thorax, their length not quite so great as their breadth, their punctuation dense and fine. The margins of the segments of the abdomen are brownish, and the extremity is lighter in colour; segments two to four are pretty thickly and finely punctured; fifth segment sparingly punctured; sixth nearly impunctate. The legs are yellow, rather robust.

In the male, the upper plate of the seventh abdominal segment has the hind margin emarginate in the middle, while the under plate is very much produced, and turned upwards; the sides of the produced part are not evenly rounded, but suddenly narrowed in the middle; the extreme apex is narrow, and emarginate.

In the female, the upper plate of the seventh segment is obsoletely emarginate at the apex, while the under plate is not produced, and the posterior margin is gently rounded.

Generally distributed, and not uncommon in damp places, on the banks of rivers, &c., in both England and Scotland.

Obs.—This species is allied to *H. elongatula*, but is readily distinguished by its broader, more robust form, more transverse thorax, and the extraordinary structure of the seventh segment of the abdomen in the male.

21. *Homalota londinensis.*

Linearis, nigra, antennarum basi elytris pedibus anoque rufo-testaceis, confertim subtiliter punctata; antennis sat tenuibus, articulo penultimo leviter transverso; capite medio canalicula brevi; thorace subquadrato,

longitudine latitudine haud breviore; abdomine segmentis 2-4 crebre subtiliter punctatis, 5° parce punctato, 6° fere lævigato. Long. 2 lin.

Mas; abdomine segmento 7° ventrali producto, apicem versus angustato, apice ipso emarginato-truncato.

Fem.; abdomine segmento 7° supra et infra apice rotundato.

Var.—Rufo-testacea, capite abdomineque cingulo ante apicem fuscis.

Very like a large brightly-coloured *H. elongatula*, but still larger than the largest of that species. Antennæ moderately long and slender, but little thickened towards the apex, pitchy, with the basal joints reddish-testaceous; joints two and three of about equal length, four to ten each one a little shorter and broader than its predecessor, the first of them longer than broad, the last of them not quite so long as broad; eleventh joint moderately long, not quite so long as the tenth. Palpi, and parts of the mouth, reddish-yellow. Head narrower than the thorax, suborbiculate, with a distinct short channel on the vertex finely but not closely punctured. Thorax a little narrower than the elytra, about as long as broad, not narrowed behind, with a longitudinal channel in the middle; closely and finely punctured; scarcely black in colour, generally more or less distinctly reddish-brown. Elytra about a third longer than the thorax, their length slightly greater than their width, of a reddish or brownish-red colour, closely and finely punctured. Abdomen black, with the extremity, as well as the hind margins of the segments, more or less distinctly reddish-yellow; segments two to four closely and finely punctured, fifth more sparingly, sixth nearly smooth. Legs reddish-yellow.

In the male, the under plate of the seventh segment of the abdomen is produced, and narrowed towards the apex, but scarcely bent upwards; the apex itself is truncate, and a little emarginate; the hind margin of the upper plate is not at all emarginate. In the female, the upper and under plates of the seventh segment both have the hind margin gently rounded.

This species varies considerably in colour.

Not uncommon in marshy places in the neighbourhood of London. It occurs elsewhere, but, apparently, more

rarely. I have a specimen from as far north as Inverness-shire, and have also seen the species from Germany.

H. londinensis may readily enough be mistaken for any of three other species, *luridipennis*, *elongatula*, and *terminalis*. From *luridipennis* it is distinguished by its narrow form, bright colour, not transverse thorax, and less marked male characters. From *elongatula* its larger size, brighter colour, rather more transverse penultimate joints of the antennæ, and the male characters (approaching *luridipennis*) distinguish it. It has much the colour of *terminalis* (a species not yet found in Britain), but has slender antennæ, which are also darker in colour; it is larger, and has different male characters.

22. *Homalota hygrotopora*.

Latior, fusco-nigra, antennis piceis, basi piceo-testaceis, elytris fuscis, pedibus obscure testaceis, confertim subtiliter punctata; thorace transversim subquadrato; abdomine supra segmentis 2-4 sat crebre subtiliter punctatis, 5° sparsim punctato, 6° fere lævigato. Long. 1¾ lin.

Mas; abdomine segmento 7° ventrali evidenter producto, apicem versus angustato, apice ipso rotundato-acuminato.

H. hygrotopora, Kr. Ins. Deutsch. ii. 220; Wat. Cat. *H. opacula*, Th. Sk. Col. ix. 272 (forte).

Like *H. elongatula*, but larger, broader, of a more obscure colour. The antennæ are moderately slender, scarcely thickened towards the apex; pitchy black, obscurely paler at the base; joints two and three moderately long, two a little longer than three, four to ten differing but little in length, the first of them longer than broad, the last of them about as long as broad; eleventh joint about half as long again as the tenth. Palpi pitchy-yellow. Head rather broad, narrower than the thorax, the disc flat, finely, not very thickly punctured, dull. Thorax narrower than the elytra, about one-third broader than long, scarcely narrowed behind, with an indistinct impression in the middle in front of the scutellum; very finely and pretty densely punctured. The elytra are of an obscure pitchy-brown colour; about one-third longer than the thorax, their length not quite so

great as their breadth. Abdomen black, shining; segments two to four pretty finely and thickly punctured, fifth segment more sparingly punctured, sixth nearly impunctate; the extreme apex obscurely pitchy. Legs pitchy-testaceous.

In the male the under plate of the seventh abdominal segment is much produced, narrowed towards the apex; the apex is not pointed, but formed by the meeting of two gentle curves.

This species is generally distributed in England and Scotland. It is fond of very wet places, in marshes, and on the banks of streams and rivers.

Obs.—Thomson's *H. hygrobia* is said to be this species (*vide* Kr. Berl. Ent. Zeit. 1860, p. 99), but his description does not bear this out; moreover, Thomson in his 9th vol., when going over the synonymy of the genus, does not quote Kraatz's *hygrotopora* as a synonym of his *hygrobia*. On the other hand the description by Thomson (*loc. cit.*) of *H. opacula* seems to agree very well with this species. I think it not improbable that *H. hygrobia*, Th., will prove to be a var. of *H. elongatula*.

23. *Homalota elongatula.*

Linearis, nigra, subnitida, elytris antennisque fuscis, harum basi pedibusque testaceis, confertim subtiliter punctata; thorace subquadrato; abdomine supra segmentis 2-4 sat crebre punctatis, 5° sparsius punctato, 6° fere lævigato. Long. $1\frac{1}{2}$ lin.

Mas; abdomine segmento 7° ventrali evidenter producto, apicem versus sat angusto.

Fem.; segmento 7° dorsali apice medio obsolete emarginato.

Aleochara elongatula, Grav. Micr. Bruns. 79; *H. elongatula*, Er. (*ex parte*) Gen. et Spec. Staph. 89; Kr. Ins. Deutsch. ii. 216; *Atheta elongatula*, Th. Sk. Col. iii. 67.

A moderate-sized, rather narrow and elongate species, varying somewhat in colour and size. The antennæ are rather long, scarcely thickened towards the apex; joints two and three rather long and slender, three not quite so long as two, four to ten differing little from one another, the first of them longer than broad, the last of them about as long as broad; eleventh joint not quite twice the length of

the tenth. The palpi are yellowish, with the last joint more or less infuscate. The head is narrower than the thorax, suborbiculate, the disc moderately convex, very finely and not very closely punctured. The thorax is but little narrower than the elytra, subquadrate, the length being about equal to the breadth, scarcely narrowed behind, with or without a central longitudinal channel, finely and closely punctured. The elytra vary in colour, being sometimes reddish-brown, sometimes pitchy-black; they are about one-third longer than the thorax; subquadrate, their length being about equal to their breadth; closely and finely punctured. The abdomen is black and shining, more or less distinctly yellow at the apex; segments two to four pretty closely and finely punctured, fifth segment more sparingly punctured, sixth nearly smooth. Legs yellow.

In the male, the under plate of the seventh segment of the abdomen is narrow, and projects considerably beyond the upper plate; its hind margin is gently rounded.

In the female, the upper plate of the seventh segment is slightly emarginate in the middle, while the under plate is broader than the same part in the male, and does not project beyond the upper plate.

Extremely common all over the kingdom, in moss, and wet places, on the banks of rivers, &c.

24. *Homalota volans.*

Linearis, antennis sat tenuibus, articulis penultimis quadratis, crebre subtiliter punctata; thorace transversim subquadrato; abdomine segmentis 2-4 sat crebre subtiliter punctatis, 5° sparsius punctato, 6° fere lævigato. Long. $1\frac{1}{4}$-$1\frac{1}{2}$ lin.

Mas; abdomine segmento 7° ventrali vix producto, apice rotundato.

Fem.; segmento 7° dorsali apice rotundato.

H. volans, Scriba, Stet. Ent. Zeit. 1859, p. 413.

This species, distinguished from *H. elongatula* by Herr Scriba, is extremely variable, and most difficult to characterize. Some of its varieties approach extremely closely to *H. elongatula,* but it is, I think, a really distinct species. Compared with *H. elongatula,* it has less developed antennæ, these being a little more slender,

and a little shorter than in *elongatula;* the second joint is rather longer in proportion to the third, and each joint is generally rather more narrowed towards the base. *Volans* is generally smaller than *elongatula*, and the specimens of equal size with *elongatula* are broader in proportion (though the smallest variety of *volans* is, comparatively, narrower than *elongatula*). The thorax of *H. volans* is shorter than that of *H. elongatula*, and the male and female characters offer constant distinctive characters. The male of *H. elongatula* has the ventral portion of the seventh segment narrow, and produced considerably beyond the upper plate, while in *volans* the same part is broader, shorter, and more evenly rounded, and projects but little beyond the upper plate.

In the female of *H. elongatula*, the upper plate has the apex in the middle a little emarginate, while in *volans* the outline of the hind margin is not interrupted. The setæ towards the apex of the abdomen are in each sex of *H. volans* more numerous than in *elongatula*.

The type of *H. volans* is $1\frac{3}{8}$-$1\frac{1}{2}$ lin. long; the antennæ are moderately long and slender, of an obscure ferruginous colour. The thorax is about a fourth broader than long, a little narrower than the elytra; these are about a third longer than the thorax. The legs reddish-yellow.

Var. α.—Smaller than the type, more especially narrower and more parallel, the thorax rather longer, and a little more narrowed behind; the antennæ and legs of a dusky yellow.

Var. β.—Rather larger and more robust than the type, the colour of the legs, antennæ, and elytra, brighter.

Var. γ.—Like β, but still brighter in colour, with a more transverse thorax, this part appearing therefore more narrowed behind.

Var. δ.—Broader and more depressed than the type; black, with the antennæ pitchy and slender; the head small in proportion to the thorax, and the thorax more transverse, being fully one-third broader than long (? *H. melanocera*, Th.).

Though the extreme forms of these varieties might be considered distinct species, yet they are connected with the type by intermediate specimens in the most unmistakeable manner. They occur more or less as races; that

is to say, that in a given spot the greater portion of the specimens found may be referred to one or other of the varieties. The type and var. β are the commonest, more especially in the south; var. α is rare, I have found single specimens of it at different times near Thornhill; var. γ is rare, but generally distributed; of var. δ, the extreme forms are to be found only among the Scotch hills, in shady and wet places, but I have from Wimbledon Common numerous specimens intermediate between it and the type.

The varieties might be increased to an indefinite extent, by taking into consideration the channelling of the thorax, the colour of the extremity of the abdomen, and of the elytra, &c.

Obs.—I am strongly inclined to think that several of the species of *Homalota* described by Thomson as allied to *H. elongatula* will prove to be forms of *H. volans*. Indeed, a specimen of *Atheta halophila* which Mr. Crotch has received from Herr Thomson is certainly not specifically distinct from *H. volans*.

25. *Homalota clavipes.*

Linearis, nigra, sat nitida, subtiliter sat confertim punctata, antennis pedibus anoque fusco-testaceis; thorace subquadrato, elytris hujus longitudinis; abdomine supra segmentis 2-4 confertim subtiliter, 5-6 sat sparsim punctatis. Long. $1\frac{3}{4}$ lin.

Mas; segmento 7° ventrali distincte producto.

Fem.; segmento 7° ventrali haud producto, apice medio obtuse angulato.

Var.—Capite medio canalicula brevi.

Resembles a large dark coloured *elongatula*. Antennæ pitchy-testaceous, with the base a little paler, moderately long, a little thickened towards the apex; joint two rather longer than three; joints four to ten varying but little in length, but each one a little broader than the one before it, the fourth joint longer than broad, the tenth about as long as broad; the eleventh not quite twice the length of the tenth. Palpi pitchy-testaceous. Head narrower than the thorax, pretty densely and finely punctured, sometimes with a distinctly impressed short channel on the disc, sometimes with an indistinct fovea, and sometimes convex. The thorax is very nearly as

broad as the elytra, its length about equal to it breadth, scarcely visibly narrowed behind, finely but not densely punctured, with an indistinct impression in front of the scutellum, from which proceeds a short channel, varying in distinctness, and sometimes absent. Elytra pitchy-black, not longer than, or scarcely so long as, the thorax, finely and pretty densely punctured. Segments two to four of the abdomen are finely, evenly, and densely punctured; the punctuation of the fifth and sixth segments is more sparing, but distinct; the extremity of the abdomen is obscurely paler. The legs are pitchy-testaceous.

In the male, the ventral plate of the seventh segment of the abdomen is narrower than in the female, and projects considerably beyond the upper plate; its hind margin is flattened, and sometimes appears emarginate in the middle.

This species can only be confounded with *H. elongatula*, but it is a little larger, darker, and more shining; the elytra are shorter, and the punctuation of the abdomen is throughout denser and more even than in *H. elongatula*.

Found hitherto only on the higher mountains of Scotland, Ben Lomond, Mamsoul, &c.

26. *Homalota tibialis.*

Linearis, nigra, sat nitida, pedibus piceis; thorace subquadrato, elytris hoc fere brevioribus; abdomine supra segmentis 2-4 parce punctatis, 5-6 fere lævigatis. Long. $1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° ventrali producto, apicem versus angustato.

Fem.; abdomine segmento 7° ventrali margine posteriore medio subtiliter emarginato.

H. tibialis, Heer, Faun. Col. Helv. 335; Kr. Ins. Deutsch. ii. 325; Wat. Cat.

This species is readily distinguished by its deep black colour, its rather narrow elongate form, and its short elytra, only the length of the thorax. The antennæ are pitchy, or pitchy-black, with the basal joint obscurely paler; they are a little thickened towards the apex; joints two and three of about equal length; four and five each about as long as broad, the fourth smaller than the

fifth; the following joints differ but little in length, each is a little broader than its predecessor; the penultimate joints each a little broader than long; the eleventh joint is rather stout, about half as long again as the tenth. The head is a little narrower than the thorax; the disc flattened, and somewhat depressed in the male; in the female convex and with a small fovea, sparingly and indistinctly punctured. The thorax is about as broad as the elytra, about a fourth broader than long; the sides nearly straight, very slightly narrowed behind, very finely and not closely punctured, moderately shining, with an indistinct impression in front of the scutellum. The elytra are about as long as the thorax, black or pitchy-black, rather sparingly punctured, but more distinctly than the thorax, pubescence fine and scanty. The abdomen is black and shining, segments two to four sparingly punctured, fifth still more sparingly punctured, sixth nearly impunctate. Legs pitchy, or pitchy-yellow, tarsi rather stout.

In the male, the under plate of the seventh segment of the abdomen is considerably produced and narrowed towards the apex; in the female, the apex of this plate is broad, not produced, a little emarginate in the middle, and furnished with short parallel black cilia.

Common on the hills of Scotland, Wales, and the north of England.

Obs.—It is remarkable that no one of the three species restricted in this country to the hills (viz., *tibialis, eremita,* and *clavipes,*) appears to have yet been found in Sweden.

27. *Homalota gregaria.*

Linearis, vix nitida, dense subtiliter punctata, fusco-nigra, antennis pedibusque fusco-testaceis; antennis sat validis, apicem versus vix incrassatis; thorace subquadrato; abdomine supra segmentis 2-5 crebre subtiliter punctatis, 6° fere lævigato. Long. $1\frac{1}{3}$-$1\frac{1}{2}$ lin.

Var.—Minor, elytris antennis pedibusque testaceis.

H. gregaria, Er. Gen. et Spec. Staph. 87; Kr. Ins. Deutsch. ii. 215; Wat. Cat. *Tachyusa immunita,* Er. Gen. et Spec. Staph. 916; *Aloconota immunita,* Th. Sk. Col. iii. 10.

Somewhat like a small *H. elongatula*, but with a peculiar dullish appearance, and at once to be distinguished from that species by the punctuation of the abdomen, and the structure of the posterior tarsi. The antennæ are rather stout for a species of this section, pitchy-testaceous, a little thickened towards the apex; joints two and three rather long, and of nearly equal length; from the fourth to the tenth each one is just a little shorter and broader than the preceding one, the tenth scarcely so long as broad, the eleventh rather stout and about twice the length of the tenth. The palpi are pitchy-testaceous. The head is narrower than the thorax, dull; the punctuation so fine as to be scarcely visible. The thorax is evidently narrower than the elytra, but little narrowed behind, the length about equal to the breadth, very finely and closely punctured, with a more or less distinct broad shallow impression in the middle in front of the base. The elytra are scarcely a fourth longer than the thorax, closely and finely punctured. The abdomen has segments two to five above, closely, finely, and evenly punctured, the punctuation of the fifth segment being a little more sparing than that of the fourth; the sixth segment is nearly impunctate. The legs are yellow, more or less pitchy; the posterior tarsi long and slender, the basal joint nearly twice as long as the second.

The male is with difficulty distinguished from the female by the upper and under plates of the seventh abdominal segment being narrower than in the other sex. The impression at the base of the thorax is often more evident in the male than in the female.

A very abundant species all over the country, and one which occurs in very different spots.

Obs.—Out of some hundreds of specimens, I find only one that can be considered a variety; it is much smaller, and generally paler in colour than ordinary *H. gregaria*.

Group V. *Abdomen with the basal segments sparingly punctured, the apical ones nearly impunctate.*
(Species 28—35).

Of this group *H. vestita* and *silvicola* are somewhat discordant members; the male characters of these two are different from the rest. *H. silvicola* indeed exhibits a considerable resemblance to the *merdaria* group. *H. vestita* is confined to the coast; the other species are found among moss, dead leaves, &c.

28. *Homalota vestita.*

Nigra, elytris ferrugineis, antennarum basi plus minusve pedibusque testaceis, corpore anticè pube flavescente sat dense evidentius vestito; capite et thorace sat fortiter distincte punctatis, hoc basin versus evidenter angustato; abdomine supra basi parce punctato. Long. $1\frac{2}{3}$ lin.

Mas; abdomine segmento 7° ventrali vix producto, apice rotundato.

Fem.; segmento 7° ventrali haud producto, apice medio late haud profunde emarginato.

Pœderus vestitus, Grav. Mon. 140; *H. vestita,* Er. Gen. et Spec. Staph. 84; Kr. Ins. Deutsch. ii. 208; Wat. Cat. *Thinobœna quisquiliarum,* Th. Sk. Col. iii. 59.

This species is distinguished from its allies by the punctuation of its head, thorax, and elytra, which is more distinct and sparing than usual. The pubescence with which it is clothed is yellowish, and like the punctuation, is more conspicuous, though less dense, than in the neighbouring species.

The antennæ are moderately stout, but little thickened towards the apex, varying in colour, but with the basal joints yellow, and rather paler in colour than the apical ones; joints two and three of nearly equal length; four to ten differing but little in length, the first of them longer than broad, the last not quite so long as broad; eleventh joint half as long again as the tenth. The head is narrower than the thorax, black and shining, distinctly but not closely punctured, the punctures not covering the central part. The thorax is narrower than the elytra, its length about equal to its breadth, distinctly narrowed behind, with a central longitudinal channel varying in distinctness, rather coarsely, but not closely punctured. Elytra obscurely brown, or yellowish-brown, a little longer than the thorax, and moderately closely and coarsely punctured. The abdomen is black and shining, with the apex obscurely paler, the basal segments are sparingly punctured, the fifth even more sparingly than the fourth, sixth nearly impunctate. The legs are of a yellowish colour, the posterior tarsi rather long and moderately stout, with the claws more developed than usual.

The male has the under plate of the seventh segment of the abdomen projecting a little beyond the upper plate, and its apex is rounded; while in the female, the under plate does not project beyond the upper, and its hind margin is emarginate in the middle.

Abundant under sea-weed on the coasts of England and Scotland.

Obs.—Thomson has reversed the sexes of this species.

29. *Homalota nitidula.*

Nigra, nitidula, elytris vel piceis vel brunneis, pedibus piceo-testaceis; subtiliter sat confertim punctata; thorace subquadrato, postice haud angustato; abdomine supra segmentis 2-4 parcius punctatis, 5 et 6 fere lævigatis. Long. 1¾-2 lin.

Mas; abdomine segmento 7° supra parce subtiliter granulato, margine apicali truncato et obsolete crenulato.

Fem.; abdomine segmento 7° supra et infra margine apicali rotundato.

H. nitidula, Kr. Ins. Deutsch. ii. 211; Wat. Cat.; *Atheta nitidula,* Th. Sk. Col. iii. 64.

Var.—Angustior, antennis tenuioribus, thorace paulo longiore, elytris thoracis longitudinis. *Hab.* in montibus Scotiæ.

This species varies a good deal in the colour of the legs, antennæ, and elytra. The antennæ are generally black, more or less pale at the base, moderately stout, but little thickened towards the apex; joints two and three of about equal length; four to ten scarcely differing in length, but each a little broader than the preceding one, the fourth longer than broad, the tenth not so long as broad; eleventh joint moderately long and rounded, about twice the length of the tenth. Head black and shining, smaller than the thorax, sparingly and finely punctured. The thorax is but little narrower than the elytra, scarcely a third broader than long, not narrowed behind, finely and rather sparingly punctured, with an obsolete impression in front of the scutellum, but not channelled. The elytra are a little longer than the thorax, but more closely and distinctly punctured. The abdomen is shining black, with the basal segments sparingly but distinctly punctured, the apical ones almost impunctate. The legs pitchy-yellow.

In the male, the seventh segment of the abdomen is, on the upper side, sparingly sprinkled with small granulations, its apical margin is truncate and obsoletely crenulate.

In the female, the upper and under plates of the seventh segment have the hind margin gently rounded.

The type of this species (that described above) occurs very rarely in the South of England, sometimes in the nests of *Formica fuliginosa*.

In the north of Scotland, on Mamsoul, I have captured a series of about two dozen specimens of a *Homalota*, which may, perhaps, prove a distinct species from that described above, though I think them only a variety. They are lighter in colour, and not quite so shining, and are narrower, especially towards the front; the antennæ are a little thinner, the thorax is longer and narrower, so that its length is about equal to its breadth, and the elytra are but little, if at all, longer than the thorax. The male characters are the same as in our Southern specimens. I have not seen a sufficiently large series of the Southern form to be able to judge to what extent it varies; but should these Scotch specimens prove a distinct species, the name *nitidiuscula* may be applied to it. Two or three examples taken on the hills about Thornhill appear to be somewhat intermediate.

Obs. I.—A German specimen of *H. nitidula*, sent by Kraatz to the British Museum, agrees entirely with our Southern examples.

Obs. II.—*H. nitidula* is only likely to be confounded with *H. graminicola*, but is readily distinguished from it by its stouter antennæ, and the much finer punctuation of its elytra.

30. *Homalota oblongiuscula.*

Nigra, nitidula, elytris vel ferrugineis vel fuscis, pedibus fusco-testaceis, subtiliter sat confertim punctata; antennis sat validis, apicem versus incrassatis; thorace transversim subquadrato; abdomine supra basi parcius punctato, apice lævigato. Long. $1\frac{1}{2}$-$1\frac{2}{3}$ lin.

Mas; antennis articulo tertio incrassato, capite utrinque fortius punctato; abdomine segmento 7° dorsali obsoletissime crenulato, ventrali subproducto.

H. oblonga, Wat. Cat.

Var.—Thorace medio ante basin obsolete bi-impresso.

Very like *H. vicina*, and but little smaller; the antennæ are black, stout, and distinctly thickened towards the apex; second and third joints rather stout, of about equal length (the third joint thicker in the male than in the female); joints four to ten differ but little in length, the first of them is a little longer than broad, the last of them not so long as broad; the eleventh joint rather long, twice the length of the tenth. The head is much smaller than the thorax, black and shining, distinctly but not densely punctured; the disc more flattened in the male, and the punctuation much more distinct. The thorax is but little narrower than the elytra, not, or scarcely at all, narrowed behind, its breadth about one-third greater than its length, finely and not very densely punctured, not channelled. The elytra are generally of an obscure brownish colour, sometimes pitchy, not much longer than the thorax, finely and pretty densely punctured. The abdomen is black and shining, the basal segments sparingly and finely punctured, the apical ones almost impunctate. The legs are testaceous, more or less dusky, the femora not darker than the tibiæ.

The male differs in several points from the female. The antennæ have the third joint stouter than in the female, and the other joints slightly shorter; the punctuation of the head is much more distinct; the seventh segment of the abdomen, on the upper side, has the hind margin obsoletely crenulate; and the ventral plate is more produced than in the female, though but little narrower.

Not common, but pretty generally distributed in England and Scotland.

H. oblongiuscula sometimes greatly resembles *H. vicina*, but is readily distinguished, amongst other characters, by its rather stouter antennæ, shorter elytra, and the thighs not darker than the tibiæ. From *H. nitidula* its smaller size and comparatively stouter antennæ distinguish it.

Obs.—*H. oblongiuscula* is very closely allied to *H. oblonga*, Kr. It is smaller, has a shorter thorax, which is without any broad shallow impression at the base, and it has less developed and darker coloured antennæ. Judging from Thomson's description, Sk. Col. ix. 266, *Liogluta microptera* should be one or the other of these two species; or, at any rate, is very closely allied.

31. *Homalota silvicola.*

Nigra, nitidula, antennis validis, piceo-testaceis, basi dilutiore, articulo ultimo magno, conico; thorace subquadrato; elytris thorace paulo longioribus, læte brunneis, evidentius punctatis; abdomine supra basi distincte minus crebre punctato, apice fere lævigato; pedibus testaceis. Long. $1\frac{3}{4}$-$2\frac{1}{8}$ lin.

Mas; abdomine segmento 7° ventrali producto, angustato, apice rotundato.

Fem.; segmento 7° ventrali haud producto, apice lato, vix rotundato.

H. silvicola, Fuss, Berl. Ent. Zeit. xii. 1868, p. 353. *H. hypnorum,* Sharp, Trans. Ent. Soc. Lond. 3rd ser. v. 450; *Liogluta hypnorum,* Th. Sk. Col. ix. 265 (forte).

N.B.—Species antennarum prothoracisque structura variabilis.

A large fine species, with remarkable antennæ; these are stout and thickened towards the apex, bright reddish-testaceous at the base, and more or less infuscate towards the apex; the first joint stout, two and three moderately long, the latter a little the longer; in different specimens the intermediate joints of the antennæ differ considerably in length, the fourth is sometimes a little longer than broad, sometimes even broader than long; after the fourth, the joints differ but little from another in length, but each one is a little broader than its predecessor, more so in some specimens than others; the intermediate joints are more or less transverse, the tenth always broader than long, sometimes strongly transverse, the eleventh is stout and remarkably long, about as long as the three preceding joints; it is of a more or less dusky testaceous colour, and generally lighter in colour than the preceding joints. The head is rather small, much smaller than the thorax; black and shining, finely and sparingly punctured. The thorax is somewhat narrower than the elytra, variable in length, sometimes nearly as long as broad, sometimes one-third broader than long; very little narrowed behind, pretty finely and not densely punctured; with an impression in front of the scutellum, from which proceeds a short, more or less distinct channel. The elytra are a little longer than the thorax, of a bright brownish colour, indistinctly darker about the scutellum and at the apical margins; thickly

and rather strongly punctured; shining, but with a well marked pubescence. The abdomen is black and shining, with the segments two to four distinctly but not densely punctured; fifth segment very sparingly punctured, sixth almost impunctate. Legs yellow.

In the male, the ventral plate of the seventh segment of the abdomen is narrower and more produced than in the female, its apex forming as it were the half of an oval.

Rare. Found at Shirley Common near London, and in moss in different parts of Scotland; Dumfries, Strath Cannich.

The remarkable terminal joint of the antennæ of this species, should prevent its being confounded with any other of this section.

Obs. I.—I am indebted to Herr Scriba for an opportunity of examining Herr Fuss's type of *H. silvicola;* it is undoubtedly a female of the present species, with longer thorax and longer antennæ than the average of specimens, the latter are also less thickened towards the apex than usual in this species.

Obs. II.—*H. silvicola* must be closely allied to *H. micans,* Muls. (*hypnorum,* Kies.) to which species indeed I formerly referred a very large and fine female specimen, found by me in Inverness-shire. I have never had an opportunity of examining an authentic example of *H. micans* or *hypnorum,* all the specimens I have seen named as that species being varieties of the present insect. Thomson's description of *Liogluta hypnorum* seems to me also clearly to point to the species I have described above.

32. *Homalota vicina.*

Nigra, nitida, elytris fuscis disco testaceis, pedibus fusco-testaceis, femoribus obscurioribus, subtiliter punctata; thorace transversim subquadrato; abdomine supra parce subtiliter punctato, segmento 2° dorsali medio tuberculo parvo. Long. $1\frac{3}{4}$ lin.

Mas; abdomine segmento 2° tuberculo evidentiore, 7° dorsali subtiliter granulato, margine apicali medio obscure acuminato.

Fem.; abdomine segmento 2° tuberculo minore, 7° ventrali medio late obsolete emarginato.

Aleochara vicina, Steph. Ill. Brit. Ent. v. 116; *H. vicina*, Wat. Cat. *H. umbonata*, Er. Gen. et Spec. Staph. 82; Kr. Ins. Deutsch. ii. 209; *Liogluta umbonata*, Th. Sk. Col. iii. 56.

This species is remarkable by the small tubercle at the base of the second segment of the abdomen. The antennæ are black, rather stout, a little thickened towards the apex; joints two and three rather long, of about equal length, four to ten differing but little in length, the first of them longer than broad, the last of them scarcely so long as broad; eleventh about twice as long as the tenth. Head black and shining, much narrower than the thorax, a little narrowed behind the eyes, which are rather large and prominent, with an indistinct impression behind the insertion of the antennæ, so that the middle part of the head in front appears raised; sides sparingly and finely punctured, the middle black, shining and impunctate. Thorax a little narrower than the elytra, not narrowed behind; about a third broader than long, finely but rather sparingly punctured, with an impression in front of the base in the middle. The elytra are a third longer than the thorax, of a blackish colour at the base and edges, the middle of a lurid testaceous, finely and pretty closely punctured. The abdomen is black and shining, the basal segments very sparingly punctured, the apical ones impunctate; the second segment has in the middle a small tubercle, very indistinct in the female. The legs are pitchy testaceous, the thighs always darker than the tibiæ.

The male has the abdominal tubercle on the second segment larger than in the female. The dorsal plate of the seventh segment is sprinkled with small tubercles, and its hind margin projects a little in the middle.

In the female, the under plate of the seventh segment is broader and shorter than in the male, and has its hind margin broadly but obsoletely emarginate.

Abundant all over the country.

This species is distinguished by its dark black colour, and the lighter disc of the elytra; in this respect *H. triangulum* somewhat resembles it, but that species is not so shining, and is without any tubercle on the second segment of the abdomen.

Obs.—As Stephen's description of *Aleochara vicina* is pretty clearly recognizable as this species, and is anterior to Erichson's *umbonata*, I have adopted his name.

33. *Homalota crassicornis.*

Nigro-picea, nitidula, antennis fusco-testaceis, basi dilutiore, elytris testaceo-brunneis, pedibus testaceis; thorace transversim subquadrato; elytris thorace paulo longioribus, alutaceis; abdomine supra antice parcius punctato, apice lævigato. Long. 1⅔ lin.

Mas; thorace medio late bi-impresso, abdomine segmento 7° dorsali confertim granulato, utrinque apicem versus granulo dentiformi majore, margine apicali medio obtuse acuminato.

Fem.; abdomine segmento 7° supra et infra late rotundato.

Aleochara crassicornis, Gyll. Ins. Suec. iv. 486; *Liogluta crassicornis,* Th. Sk. Col. iii. 56. *H. granigera,* Kies. Stet. Ent. Zeit. xi. 218; Kr. Ins. Deutsch. ii. 207.

A shining and brightly coloured species, narrow (especially in front) in comparison with its length. The antennæ are rather long, not stout, thickened towards the apex; joints two and three long and slender, three longer than two, four to ten differing but little in length, but each one a little broader than its predecessor, the fourth and following joints longer than broad, but the tenth scarcely so long as broad; eleventh about as long as the two preceding joints. Head considerably narrower than the thorax; shining, nearly black, rather sparingly punctured, the punctures rather large but very shallow. The thorax is a little narrower than the elytra; pitchy-black, and rather shining; nearly a third broader than long, not narrowed behind, its punctuation rather sparing and shallow, but distinct; in the male with a broad impression on the disc. The elytra are a little longer than the thorax, of a testaceous brown colour, obscurely darker about the base and towards the margins, alutaceous. The abdomen is pitchy-black, with the posterior edges of the segments more or less pale, shining, the basal segments very sparingly punctured; fifth and sixth segments nearly impunctate. Legs yellow.

In the male, the thorax has a broad impression on the disc, formed by two longitudinal impressions nearly united. The seventh segment of the abdomen is thickly sprinkled with very distinct granulations, one of these on each side at the apex being larger and thickened at the front; its

hind margin is thickened and a little produced in the middle, which forms, therefore, an obtuse angle. The head also has sometimes a broad impression.

Of this species, I have seen only three British specimens; they were taken by me in Inverness-shire. They agree specifically with specimens of *H. granigera*, sent by Kraatz to the British Museum.

Obs.—This species is closely allied to *H. pagana*, but is smaller and narrower, especially in front, it is darker in colour and more shining; the hind margin of the seventh segment is of a different shape in the male, and the large granulation on each side at the apex is thickened at its forward end—a slight, but apparently very constant, character.

34. *Homalota pagana.*

Picea, antice subnitida, antennis fuscis, basi pedibusque testaceis, elytris testaceo-brunneis; thorace subquadrato, elytris hoc paulo longioribus; abdomine supra basi parce punctato, apice lævigato. Long. 2-2¼ lin.

Mas; abdomine segmento 7° dorsali confertim granulato, apicem versus utrinque granulo dentiformi, apice ipso late rotundato, fere truncato.

Fem.; segmento 7° supra et infra apice late rotundato.

H. pagana, Er. Gen. et Spec. Staph. 83; Kr. Ins. Deutsch. ii. 206; Wat. Cat. *Liogluta arvicola*, Th. Sk. Col. iii. 55.

A large and peculiarly coloured species. The antennæ are long, and moderately stout, but little thickened towards the apex; pitchy in colour, with the base testaceous; basal joint stout, two and three rather long, three longer than two, four to ten differing but little in length, the length of each greater than its breadth; the eleventh about as long as the two preceding. Head nearly black, rather broad, but considerably narrower than the thorax; its punctuation distinct, but not close. Thorax of a pitchy-yellow colour, a little broader than long, a little narrower than the elytra, slightly narrowed behind, distinctly and pretty closely punctured. The elytra are a little longer than the thorax, and lighter in colour than it, their sculpture close and fine, alutaceous (the German expression for this is "lederartig," like leather). The abdomen is

shining, pitchy; the fourth, fifth and sixth segments darker than the base and apex, the basal segments very sparingly punctured, the apical ones impunctate. The legs are yellow.

In the male, the third joint of the antennæ is a little stouter than in the female, and the antennæ are altogether a little longer and stouter; the seventh segment of the abdomen is sprinkled above with distinct granulations, one of these on each side at the apex being longer and more distinct than the others; the hind margin is thickened, and nearly truncate.

Not common, but it occurs in various parts of England and Scotland. London; the Cheviots; Strath Cannich.

Obs.—In this species the second, third, and fourth joints of the antennæ are furnished on the inside with numerous fine white hairs; this character is common, in a greater or less degree, to the males of several species of the genus, but is more easily seen in *H. pagana* than in others.

35. *Homalota graminicola.*

Nigra, nitidula, antennis piceis, pedibus piceo-testaceis; thorace transversim subquadrato, basi impresso; elytris evidenter punctatis; abdomine supra basi parcius punctato, segmentis 5 et 6 fere lævigatis. Long. $1\frac{3}{4}$ lin.

Mas; capite impresso, thorace basi late foveolato, elytris confertim fortiter granulatis, abdomine supra segmento 6° granulis sparsim, 7° confertim asperato, hoc apice truncato et subtiliter crenulato; 7° ventrali producto, apicem versus angustato, apice ipso exciso.

Fem.; segmento 7° ventrali apice late rotundato.

Aleochara graminicola, Grav. Mon. 176; *H. graminicola,* Er. Gen. et Spec. Staph. 81; Kr. Ins. Deutsch. ii. 212; Wat. Cat.; *Atheta graminicola,* Th. Sk. Col. iii. 62.

Var.—Elytris castaneis, antennis pedibusque rufo-testaceis.

A black shining species, with the sculpture of the elytra coarse and distinct. Antennæ slender, rather long, but little thickened towards the apex, pitchy; joints two and three moderately long, three a little longer than two; four to ten differing but little in length, the length of each greater than its breadth; eleventh joint about

twice as long as the tenth. Head black and shining, sparingly and indistinctly punctured, much narrower than the thorax. Thorax narrower than the elytra, not (or scarcely) narrowed behind, its breadth about one and a half times its length, finely and pretty closely punctured, with an impression in front of the base in the middle. The elytra are about a third longer than the thorax, coarsely sculptured, the sculpture consisting of small granulations, shining in the female, duller in the male. The abdomen is black and shining, segments two to four sparingly punctured, five and six nearly impunctate; the apical segment in the male distinctly, in the female sparingly and obscurely, granulate. Legs pitchy testaceous, the femora rather darker than the tibiæ.

In the male, the head has a distinct impression in the middle of the upper surface, the impression at the base of the thorax is larger, the granulations of the elytra are much coarser, and more numerous, so as to make the elytra dull. The sixth segment of the abdomen is sparingly sprinkled, on the upper side, towards the apex, with granulations; the seventh segment is distinctly granulate, the granulations more numerous and distinct than on the sixth segment, its apex is truncate, and finely crenulate. The under plate of the seventh segment is considerably produced, narrowed towards the apex, the apex itself being a little emarginate. In the female, both the upper and under plates of the seventh segment have the hind margins broad, and rounded.

Very abundant all over the kingdom, in damp places.

Obs.—A variety occurs in which the elytra are of a brownish colour, and the antennæ and legs are also of a lighter colour than usual; it is, perhaps, Thomson's *tenuicornis*. This colour-variation is to different extents, its extreme form appears very rare.

Section B.

Group VI. *Head strongly punctured.* (Species 36—38).

The three species of this group are closely allied; they occur only on the coast, and are easily distinguished from others of the genus. *H. vestita* (of Group V.), occurring also on the coast, has a similarly punctured head.

36. *Homalota Halobrectha.*

Fusco-nigra, pube flavescenti distincte vestita, sat nitida, antennis, ore, pedibus, anoque rufo-testaceis; capite distincte punctulato; thorace subquadrato, basin versus angustato; elytris thorace longioribus, confertim distincte punctatis; abdomine supra segmentis 2-4 parce punctatis, 5 et 6 fere lævigatis. Long. $1\frac{1}{3}$-$1\frac{1}{2}$ lin.

Mas; abdomine segmento 7° dorsali apice obtuse acuminato, ventrali apice rotundato.

Fem.; segmento 7° ventrali apice latiore, medio fere emarginato.

H. atricilla, Scriba, Berl. Ent. Zeit. 1866, p. 290 (*nec* Er. Gen. et Spec. Staph.). *H. algæ,* var., Hardy, Cat. Col. North. & Dur. p. 116. *H. maritima,* Wat. Proc. Ent. Soc. Lond. 1863, p. 138. *Halobrectha flavipes,* Th. Sk. Col. iii. 50.

Var.—Minor, elytris thorace paulo longioribus, thorace lateribus antice magis rotundatis.

Of an obscure blackish or pitchy colour, with the elytra browner, the legs, extremity of abdomen, antennæ, and mouth, yellowish; the anterior parts with a distinct, moderately dense, depressed, fine, but rather rigid, yellowish pubescence. The antennæ are about as long as the head and thorax, gently thickened towards the apex, with a moderately distinct exserted pubescence, reddish-yellow, a little infuscate towards the apex; joints two and three long and slender, three not quite so long as two; four to ten, each one a little shorter and broader than its predecessor, the first of them is longer than broad, the last of them (eight to ten) broader than long. The head is scarcely narrower than the thorax, suborbiculate, with the upper surface convex, blackish, with the palpi and parts of the mouth yellow, distinctly and rather coarsely, but shallowly and moderately densely punctured, the punctures being real depressions; with a fine yellowish pubescence. The thorax is considerably narrower than the elytra, its width rather greater than its length, the sides rounded in front, then slightly but distinctly narrowed behind, moderately closely punctured, and with a yellowish pubescence, the punctuation finer than that of the head. The elytra are a third or fourth longer than the thorax, of a brownish or pitchy-black

colour, pretty closely and distinctly but shallowly punctured, and with a distinct yellowish pubescence. The abdomen is black and shining, with the extremity yellowish: segments two to four sparingly punctured, five and six almost impunctate. Legs yellowish.

In the male, the apex of the dorsal plate of the seventh segment is not altogether rounded, but a little flattened on each side, so that it is indistinctly and obtusely pointed in the middle. The ventral plate of the same segment is narrower, and its apex more rounded than in the female; but these characters are not easy to perceive.

Common under sea-weed on the coasts of England and Scotland.

Obs. I.—Scotch specimens of this species are smaller than the Southern ones, and have their elytra rather shorter, the sides of the thorax more dilated and rounded in front, so that it is more narrowed behind; having regard, however, to the great general resemblance in other respects, these cannot be considered as a distinct species. It was from such specimens, I should think, that Thomson's description of *H. flavipes* was made.

Obs. II.—This species is said, by Herr Scriba, on the authority of the type in the Museum at Turin, to be *H. atricilla*, Er. (Gen. et Spec. Staph. 101). It is quite certain, however, I think, that Erichson's description is in no way applicable to, or characteristic of, this species; and I do not believe it was made from specimens of it. I have, therefore, not adopted his name; there may have been some mistake about the type, there can be none as to the description. I have not adopted Mr. Waterhouse's name of *H. maritima*, as, according to Harold's Catalogue, there is a prior *maritima*. (I have not, however, had any opportunity of verifying Harold's quotation.) Hardy's name, *H. algæ*, has also been proposed for this species, but it cannot be used, as his description refers to *H. puncticeps*, of which he considered this a variety. As there is already a well known *Homalota flavipes*, I am obliged to find a new name for the species.

37. *Homalota puncticeps.*

Subdepressa, subopaca, nigra, antennis pedibusque piceis, pube flavescenti evidenter vestita; capite confer-

tim distincte punctato; thorace subquadrato, basin versus angustato, elytris hoc fere sesqui longioribus; abdomine supra segmentis 2-4 parce subtiliter punctatis, 5 et 6 fere lævigatis. Long $1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice angusto, truncato.

H. puncticeps, Th. Öfv. Vet. Ac. Förh. 1852, p. 133; Kr. Ins. Deutsch. ii. 232; Wat. Cat.; *Halobrectha puncticeps*, Th. Sk. Col. iii. 49. *H. algæ* (*ex parte*) Hardy, Cat. Col. North. & Dur. p. 116. *H. anthracina*, Fairm. Faune Franc. 424.

Allied to *H. Halobrectha*, but readily distinguished by its darker colour, more depressed form, longer elytra, and rather finer but more distinct punctuation, and the different male characters. The antennæ are about as long as the head and thorax, thickened towards the apex, pretty distinctly furnished with exserted hairs, blackish, with the base pitchy; joints two and three long and slender, three not so long as two; four to ten each a little broader than its predecessor, from the seventh to the tenth transverse; eleventh joint not quite so long as the two preceding. The head is but little narrower than the thorax, distinctly, deeply, and pretty closely punctured, with a fine yellowish-gray pubescence. The thorax is considerably narrower than the elytra, its length nearly equal to its breadth, the sides rounded in front, a little narrowed behind, its punctuation fine and moderately close, not so distinct as that of the head and elytra, with scarcely any impression in front of the scutellum. The elytra are black, nearly one-half longer than the thorax, closely, distinctly, and regularly punctured, and with a fine yellowish distinct pubescence. The abdomen is black and shining, obscurely paler at the apex, segments two to four finely and sparingly punctured, five and six almost impunctate. Legs pitchy, or pitchy-yellow.

In the male, the apex of the dorsal plate of the seventh segment of the abdomen is truncate; the truncate part is narrow, and not quite straight, for it has an indistinct projection in the middle; the ventral plate of the same segment is considerably narrower at the apex than it is in the female.

Pretty common under sea-weed on the coasts of England and Scotland.

Obs.—Hardy's name of *H. algæ* should, perhaps, be used for this species, as it is the oldest. He, however, considered this and *H. Halobrectha* as one species in his description.

38. *Homalota princeps.*

Nigra, pube flavescenti vestita, antennis elytrisque fuscis, antennarum basi pedibus anoque rufis; antennis articulis 8-10 subtransversis; capite evidenter punctato; thorace subquadrato, basin versus angustato; abdomine supra segmentis 2-4 parce punctatis, 5 et 6 lævigatis. Long. $1\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice angusto, truncato.

Much larger than the largest examples of *H. Halobrectha*, or *puncticeps*, and in colour somewhat intermediate between the two; allied to *H. puncticeps* by the male characters, and the elytra comparatively longer than in *Halobrectha;* to *H. Halobrectha* by its punctuation, which is more sparing and shallow, but rather coarser than in *puncticeps*. The antennæ have the penultimate joints not so broad in proportion to their length as in *puncticeps* and *Halobrectha*. The apex of the dorsal plate of the seventh abdominal segment is truncate and narrow, the truncate part is, however, not quite straight, but obscurely produced in the middle.

I have seen four specimens of this fine species, all, I believe, taken in the Isle of Wight. They are none of them in good condition, so that I have not given a detailed description of minor points, but I have no doubt they will prove a good and distinct species. These specimens agree entirely among themselves, except that one of them is rather darker than the others.

Group VII. *Head finely punctured, or nearly impunctate.* (Species 39—54).

This group is an entirely artificial one, containing a number of very discrepant species. Its subdivision into five or six others would, however, scarcely simplify matters. *H. occulta* and its allies are found in fungi and vegetable refuse; *æquata* and *linearis* are bark or wood species; *incana* and *nigella* are confined to large marshes,

where they occur amongst reeds; *debilis* and *angustula* are damp moss species; and the very peculiar *H. cæsula* occurs only in very dry, sandy places. *H. subglabra* might, perhaps, be quite as correctly placed near *H. palustris*.

39. *Homalota occulta.*

Linearis, subdepressa, antice subopaca, sculptura subtiliore, nigra, elytris fuscis, pedibus fusco-testaceis; antennis apicem versus vix incrassatis; thorace transversim subquadrato, basin versus vix angustato; elytris alutaceis; abdomine nitidulo, basi parce punctato, apice fere lævigato. Long. $1\frac{1}{2}$-$1\frac{2}{3}$ lin.

Mas; antennis articulo 3° crassiore, abdomine segmento 7° dorsali, lateribus et apice, reflexo-marginato, apice late obsolete emarginato.

H. occulta, Er. Käf. Brand. i. 317; Gen. et Spec. Staph. 83; Kr. Ins. Deutsch. ii. 233; *Bessobia occulta,* Th. Sk. Col. iii. 43.

Antennæ entirely black, moderately stout, but scarcely thickened towards the apex; first joint stout and rather long, two and three of about equal length; four to ten differing but little in length, seven to ten not quite so long as broad; eleventh joint about half as long again as the tenth. Head smaller than the thorax, dull, its sculpture very indistinct, with a shallow impression on the disc, more evident in the male than in the female. The thorax is a little narrower than the elytra, about a third broader than long, slightly narrowed behind, its sculpture fine, not very dense, with a not very distinct impression in the front of the base in the middle. Elytra about one-third longer than the thorax, of a peculiar dull pitchy-testaceous colour, alutaceous, punctuation or sculpture being scarcely visible. Abdomen black and shining, segments two to four sparingly punctured, five and six almost impunctate. Legs pitchy-testaceous.

In the male, the third joint of the antennæ is much stouter than in the female, and the impression on the middle of the head is more evident. The dorsal plate of the seventh abdominal segment has the sides very distinctly raised, the apical margin also raised, but not so distinctly as the sides, the apex itself is broadly, but very indistinctly, emarginate.

In the female, both the upper and under plates of the seventh segment are simple, and with the hind margin broadly rounded.

I have seen only two specimens, ♂ and ♀, that I can certainly refer to this species; most of the specimens representing it in our collections belong to the next species; a male specimen of *H. occulta*, sent by Kraatz to the British Museum, agrees altogether with these two.

40. *Homalota fungivora*.

Linearis, subdepressa, nigra, elytris obscure fuscis, pedibus fusco-testaceis; sculptura subtiliore; antennis apicem versus paulo incrassatis; thorace transversim subquadrato, basin versus subangustato; abdomine supra basi parce punctato, apice fere lævigato. Long. $1\frac{1}{4}$-$1\frac{1}{2}$ lin.

Mas; antennis articulo 3° incrassato, capite late impresso, abdomine segmento 7° dorsali lateribus evidenter elevatis, apice rotundato truncato, minus evidenter incrassato.

Bessobia fungivora, Th. Sk. Col. ix. 260.

This species is extremely closely allied to *H. occulta*, and is, perhaps, not really distinct from it. *H. fungivora* is smaller, has joints four to six of the antennæ narrower in proportion to the following ones, so that the antennæ appear more thickened towards the extremity than in *H. occulta;* the impression on the front of the head is broader and larger, the thorax appears a little less transverse, and more narrowed behind, and the posterior margin of the seventh segment in the male is not broadly emarginate, but is nearly straight, and shows sometimes, in the middle, traces of a very minute notch; its upper surface also generally bears a broad, indistinct, longitudinal channel. These characters, however, all appear to vary somewhat, and, as I have said above, *H. fungivora* may ultimately prove to be a variety of *H. occulta*. I have not, however, seen a sufficient series of the larger species to enable me to express a positive opinion.

H. fungivora is pretty generally distributed over the country, but is not common; it is found in fungi, especially when growing on the stumps of trees, in autumn.

Obs.—Mr. Crotch has submitted to me a specimen of *H. fungivora* forwarded to him by Herr Thomson; this agrees altogether with my British specimens.

41. *Homalota picipes.*

Nigra, antice alutacea, antennis elytrisque nigro-piceis, pedibus fusco-testaceis; antennis sat crassis, apicem versus vix incrassatis; thorace transversim subquadrato, basin versus haud angustato, postice foveolato; elytris hoc tertia parte longioribus; abdomine basi parce punctato, apice fere lævigato. Long. $1\frac{1}{3}$ lin.

Mas; antennis articulo 3° incrassato, abdomine segmento 7° dorsali, apice medio, late, fere triangulariter, emarginato, margine posteriore subtiliter incrassato, ventrali, paulo producto, apice rotundato.

Fem.; abdomine segmento 7° dorsali, apice medio triangulariter exciso, ventrali, apice obtuse acuminato.

H. picipes, Th. Öfv. Vet. Ac. Förh. 1856, p. 99; *Atheta picipes*, Sk. Col. iii. 81. *H. fusco-femorata*, Wat. Cat.

Flat, but not very depressed, shorter, broader, and comparatively rather more robust, than *H. fungivora*. The antennæ are short and stout, about the length of the head and thorax, scarcely thickened towards the apex; pitchy-black, obscurely paler at the base; first joint stout, second and third short, of about equal length, fourth a little more slender than the fifth, its length about equal to its breadth, five to ten differing but little in length and breadth, each one distinctly transverse; eleventh joint nearly as long as the two preceding. Head rather broad and short, narrower than the thorax, dullish; flat above, broadly impressed in the male, very obscurely in the female. Thorax but little narrower than the elytra, fully one-third broader than long, not narrowed behind, with an impression or short channel in the middle in front of the base, in the male with a broad impression, its sculpture alutaceous, fine and pretty dense. The elytra are quadrate, about a fourth longer than the thorax, alutaceous, the sculpture pretty dense and distinct. The abdomen is black and shining, sometimes brownish at the apex; the basal segments sparingly punctured, the fifth and sixth almost impunctate. The legs are pitchy-testaceous.

In the male, the third joint of the antennæ is thickened, the head and thorax are distinctly impressed; the upper plate of the seventh abdominal segment has its posterior margin a little thickened, and emarginate in the middle,

the lobe formed by each side of the emargination gently rounded; the under plate of the same segment is more produced than in the female, and its posterior margin is gently rounded.

In the female, the upper plate of the seventh segment of the abdomen has the apex with a distinct triangular notch in the middle; the posterior margin of the under plate is not rounded, but a little acuminate in the middle.

I have found this species only in Scotland; Edinburgh, Rannoch, Strath Cannich.

Obs.—This species has the structure of the antennæ very much like that of *H. fungicola* and its allies, but it is certainly in its place here, in the neighbourhood of *fungivora* and *excellens*. Two specimens (♂ and ♀) of *H. picipes* sent by Kraatz to the British Museum agree entirely with my specimens.

42. *Homalota excellens.*

Nigra, elytris nigro-fuscis, pedibus fuscis; thorace transversim subquadrato; abdomine basi parce punctato, apice lævigato. Long. $1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice medio triangulariter exciso, margine posteriore subtiliter incrassato, ante apicem tuberculis 6, lineam curvatam transversam formantibus, instructo.

Fem.; abdomine segmento 7° dorsali apice medio leviter emarginato.

H. excellens, Kr. Ins. Deutsch. ii. 235; Wat. Cat.

Antennæ rather short, black, distinctly but not greatly thickened towards the apex, second and third joints rather short, the third not quite so long as the second, four to ten each distinctly broader than its predecessor, seven to ten distinctly transverse; eleventh joint about half as long again as the tenth. Head considerably narrower than the thorax, black, rather dull, its punctuation indistinct, with an impression in the middle, more distinct in the male than in the female. Thorax narrower than the elytra, fully one-third broader than long, a little narrowed behind, the disc flattened, sometimes with a large impression, sometimes with a fovea in front of the base in the middle, from which proceeds a channel; its sculpture and pubescence moderately fine and not dense. The ab-

domen is shining black; the basal segments sparingly punctured, the apical ones still more so, nearly impunctate. Legs pitchy-testaceous; tibiæ and tarsi a little paler than the femora.

In the male, the seventh dorsal segment of the abdomen is furnished, before the apex, with a curved transverse row of irregular tubercles, six in number, three on each side; the outside one starts from the external apical angle of the segment, joins a second more elevated one, while more in the middle is a third smaller and more indistinct one; the posterior margin of the same segment has in the middle a triangular notch, neither very wide nor very deep, and the hind margin is a little thickened.

In the female, the apical margin of the dorsal plate of the seventh segment is a little emarginate in the middle, but not deeply so.

This species is rare, but I have found it in several localities in Scotland. Rannoch, Arran, Strath Cannich, Thornhill.

Obs.—Compared with *H. fungivora*, *H. excellens* is found to be comparatively broader and less elongate, rather more shining, of a darker, blacker colour, with shorter, broader elytra, &c. It is more closely allied to *H. monticola*, and is distinguished from that species by its darker coloured elytra, less shining surface, and less delicate punctuation and pubescence. The males of the two species are to be distinguished at once by the remarkable abdominal characters, but the distinction of the females is by no means easy. A specimen of *H. excellens* sent by Kraatz to the British Museum agrees with my specimens.

43. *Homalota monticola.*

Nitidula, subtiliter punctata, nigra, elytris fuscis, pedibus fusco-testaceis; thorace transversim convexiusculo, latitudine fere dimidio breviore; abdomine basi parce punctato, apice lævigato. Long. 1½ lin.

Mas; capite medio thoraceque ante basin distincte impressis; abdomine segmento 7° dorsali pliculis 4 instructo, apice profunde triangulariter exciso, et cum lateribus reflexo-marginato.

Fem.; segmento 7° dorsali medio leviter emarginato.

H. monticola, Th. Öfv. Vet. Ac. Förh. 1852, p. 143; Kr. Ins. Deutsch. ii. 234; Wat. Cat.; *Bessobia monticola*, Th. Sk. Col. iii. 43.

Antennæ black, rather short and stout, thickened towards the apex, joints two and three of nearly equal length, four to ten each one broader than the preceding, from the fifth onwards distinctly transverse; eleventh joint pointed, rather short, half as long again as the tenth. The head is rather broad, narrower than the thorax, moderately shining, finely and sparingly punctured; in the male with a broad impression, in the female with a channel. Thorax narrower than the elytra, transversely convex, more than a third broader than long; the sides gently rounded, scarcely narrowed behind, finely and not densely punctured; in the male with a broad impression in front of the base in the middle, in the female with an indistinct one; sometimes also with an obsolete longitudinal channel. The elytra are one-third longer than the thorax, of a brownish colour, moderately shining, their sculpture and pubescence fine. The abdomen is shining black, at the base very sparingly punctured, at the apex impunctate. The legs are pitchy-yellow.

In the male, the head and thorax are more impressed than in the female, the seventh dorsal segment of the abdomen has the apex in the middle deeply triangularly emarginate, the sides have a very distinct raised margin, the apical margin is also raised, but less distinctly than the sides, and is furnished with four raised longitudinal folds; of these, the two inner are parallel to one another, the two outer converging towards the apex.

In the female, the posterior margin of the seventh dorsal segment is a little emarginate in the middle.

Rare. I have found it at Croydon, on Purley Downs, and near Thornhill in Dumfries-shire.

The male appears to be quite as common as the female, and the remarkable structure of the seventh segment of its abdomen should prevent its being mistaken for any other species.

Obs.—Two specimens (♂ and ♀) of *H. monticola* sent by Kraatz to the British Museum agree with my specimens.

44. *Homalota subglabra.*

Nitidula, nigra, elytris pedibusque piceo-testaceis, subtiliter haud confertim punctata, subtiliter pubescens; antennis apicem versus leviter incrassatis, articulis 7-10 transversis; thorace transversim subquadrato; abdomine basi parce obsolete punctato, apice lævigato. Long. $1\frac{1}{5}$ lin.

Mas; structura abdominali femina vix distinguitur.

Rather broader than *H. palustris,* more robustly built, and more shining. The antennæ are black, stout in proportion to the size of the insect, but little longer than the head and thorax, distinctly but not greatly thickened towards the apex; the basal three joints rather slender and elongate, the second longer than the third; from the fourth to the tenth, each joint is distinctly broader than its predecessor, seven to ten transverse; eleventh joint gently pointed, moderately long, about twice the length of the tenth. Head black and shining, narrower than the thorax, a little narrower behind the eyes, which are rather prominent, finely pubescent, and almost impunctate. The thorax is narrower than the elytra, fully one-third broader than long, the anterior angles gently rounded, the sides nearly straight, not narrowed behind, its punctuation extremely fine and not dense, without channel or fovea. Elytra dusky-testaceous, darker towards the base and angles, half as long again as the thorax, shining, the sculpture finely alutaceous. The abdomen is black and shining, the basal segments sparingly and not distinctly punctured, the apical ones impunctate. The legs are of a pitchy-testaceous colour.

The male is scarcely to be distinguished from the female, except by the fact that the upper and under plates of the seventh segment of the abdomen are narrower than in the female.

This species is rare, and found only among the Scotch mountains. Rannoch, Strath Cannich, Arran, Thornhill.

Obs.—A specimen of this species, sent by Mr. Crotch to Herr Thomson, was returned by him with a label attached, marked "*umbonatæ* affinis." I think, however, it is better placed near *monticola,* from which it is distinguished by its much smaller size, finer punctuation, and absence of marked male characters.

45. *Homalota incana.*

Sat depressa, subopaca, nigra, antennis basi testaceis, apice pedibusque fuscis, harum genubus tarsisque dilutioribus, confertim fortiter punctata ; thorace transversim subquadrato, elytris angustiore ; abdomine crebre fortiter punctato, apice granulato. Long. 1½ lin.

Mas ; abdomine segmento 5° supra subtiliter, 6° et 7° fortiter granulatis, hujus apice extremo lævigato.

Fem. ; abdomine segmentis 5 et 6 obsolete vix evidenter granulatis.

H. incana, Er. Käf. Brand. i. 329 ; Gen. et Spec. Staph. 109 ; Kr. Ins. Deutsch. ii. 236 ; Wat. Cat. ; *Alianta incana,* Th. Sk. Col. iii. 44.

A peculiar, dull species. The antennæ are testaceous at the base, more or less darkened towards the apex, short, about the length of the head and thorax, thickened towards the apex; first joint longer than the second or third, three a little shorter and narrower than two ; four about as long as broad ; from this to the tenth, each joint is broader than the foregoing one, seven to ten distinctly transverse ; the eleventh joint about twice as long as the tenth. Head a little narrower than the thorax, dull, sometimes with an impression in the middle ; its punctuation pretty close, but indistinct. Thorax considerably narrower than the elytra, nearly a third broader than long, a little narrowed behind, dull, its punctuation indistinct, sometimes with an impression or channel in the middle in front of the scutellum. The elytra are nearly one-half longer than the thorax, the sculpture dense and distinct, consisting of small numerous granulations. The basal segments of the abdomen are closely and distinctly punctured, from the fourth segment to the seventh the sculpture consists of distinct fine granulations, the fourth less distinctly granulate than the following ones. The legs are pitchy, the tarsi and knees indistinctly paler than the other parts ; the posterior tarsi are stout, and rather short.

In the male, the fourth to sixth segments of the abdomen are moderately shining, the extreme apex of the seventh segment is quite smooth and shining, in front of this shining space is a row of four large indistinct

tubercles, and the space in front of these is thickly studded with granulations; the granulations of the fifth and sixth segments are also very distinct; sometimes also the posterior margin of the seventh segment has a very small notch in the middle.

In the female, the apical segments of the abdomen are not more shining than the basal ones, the granulations on the fifth and sixth segments are indistinct; the extreme edge of the seventh segment is less shining than in the male, and the four elevations in front of this space are smaller, and more separated from one another; the outside one on each side being a sort of raised line connected with the outer angle.

This peculiar species is found in large marshes, and lives in the axils of the leaves of water plants, but is to be found also amongst moss and rubbish at the edges of pools. Hammersmith Marshes and the Fen districts.

46. *Homalota nigella.*

Linearis, angusta, antice opaca; thorace subquadrato, basin versus angustato, dorso late longitudinaliter impresso; elytris hoc paulo latioribus et longioribus; abdomine segmentis 2-4 crebre distincte punctatis, 5° magis sparsim punctato. Long. 1¼ lin.

Mas; abdomine segmento 6° supra sat distincte granulato, 7° apice denticulis 4 instructo.

H. nigella, Er. Käf. Brand. i. 323; Gen. et Spec. Staph. 92; Kr. Ins. Deutsch. ii. 237; Wat. Cat. *H. immersa,* Th. Öfv. Vet. Ac. Förh. 1852, p. 139. *Dinarœa punctiventris,* Th. Sk. Col. ii. 292.

Allied both to the preceding and following species, but smaller than either. The head and thorax dull, the elytra and abdomen more shining. The antennæ are thickened towards the apex, about as long as the head and thorax, testaceous at the base, infuscate towards the apex; the first joint nearly as long as the second and third, three a little shorter and more slender than two; four to ten each a little broader than its predecessor, six to ten distinctly transverse; eleventh not quite twice as long as the tenth. The head is but little narrower than the thorax, dull, flat, broadly and indistinctly impressed in the male, the sculpture dense, but indistinct.

Thorax but little narrower than the elytra, its length but little less than its breadth, narrowed behind, but not greatly so; dull, with a broad central longitudinal impression, sculpture indistinct. The elytra are not a third longer than the thorax, rather more shining than it, sculpture dense and distinct, consisting of minute granulations. The abdomen is moderately shining, segments two to four are closely and distinctly punctured, fifth segment more sparingly punctured, sixth nearly impunctate, but with granulations in the male. The thighs are pitchy, the tibiæ and tarsi pitchy-testaceous; posterior tarsi short and stout.

In the male, the sixth segment is sprinkled above with granulations, not very conspicuously, however; the seventh segment has the hind margin furnished with four small projecting tubercles, the middle ones more distinct than the lateral.

In the female, the sixth and seventh segments are simple above.

Found in marshy places, in company with *H. incana*; Horning, Hammersmith, &c.

47. *Homalota æquata.*

Antice opaca, nigra, antennis fuscis, basi pedibusque testaceis, elytris brunneis; thorace subquadrato, late longitudinaliter impresso; abdomine segmentis 2-4 crebre punctatis, 5° magis sparsim punctato, 6° fere lævigato. Long. $1\frac{2}{3}$ lin.

Mas; abdomine segmento 5° dorsali medio granulis elevatis duobus, 6° granulis octo, 7° apice denticulis 4 instructo.

H. æquata, Er. Käf. Brand. i. 323; Gen. et Spec. Staph. 92; Kr. Ins. Deutsch. ii. 238; Wat. Cat.; *Dinarœa æquata*, Th. Sk. Col. ii. 290.

Antennæ rather stout, about as long as the head and thorax, testaceous at the base, pitchy towards the apex; first joint stout, moderately long, three a little longer than two; four to ten each a little broader than its predecessor, five to ten each broader than long; eleventh joint quite twice as long as the tenth. Palpi yellow. Head but little narrower than the thorax, flat, quite dull, the front depressed in the male, sculpture indistinct.

Thorax a little narrower than the elytra, nearly as long as broad, somewhat narrowed behind, quite dull, with a broad central longitudinal impression in the middle, with a fine channel, sometimes very indistinct; sculpture indistinct. The elytra are brownish, a little longer than the thorax, and not quite so dull as it, punctuation fine and dense. The abdomen is black, shining towards the apex, the posterior edges of the segments obscurely brown; segments two to four closely and distinctly punctured, fifth more sparingly punctured, sixth almost impunctate. Legs yellow, posterior tarsi moderately long.

In the male, the front of the head has a distinct broad impression, and the longitudinal impression on the thorax is more distinct than in the female; the fifth segment of the abdomen has, on the upper side, two small raised granulations; the sixth segment has two transverse rows of short raised longitudinal lines, four in each row; those in the hind row closer to one another than those in the front row. The sixth segment has the posterior margin furnished with four small sharp projecting teeth, the outside ones being indistinct.

Not common; found in the bark of oak stumps in England.

Obs.—This species cannot easily be mistaken for any other, if the very dull head and thorax, the brownish elytra, and the yellow legs, be noted.

48. *Homalota angustula.*

Linearis, sat depressa, dense subtiliter punctata, capite abdomineque nigris, antennarum basi pedibusque testaceis; thorace subquadrato, canaliculato; elytris læte rufotestaceis, thorace vix longioribus; abdomine segmentis 2-5 dense subtiliter punctatis, 6° parcius punctato. Long. $1\frac{1}{2}$-$1\frac{2}{3}$ lin.

Mas; abdomine segmento 6° supra granulis elevatis asperato, 7° ante apicem granulis elevatis 4, apice ipso medio denticulis duobus subprominulis, utrinque denticulis duobus obsoletis.

Aleochara angustula, Gyll. Ins. Suec. ii. 393; *H. angustula,* Er. Gen. et Spec. Staph. 91; Kr. Ins. Deutsch. ii. 238; Wat. Cat.; *Dinaræa angustula,* Th. Sk. Col. ii. 290.

A rather flat, parallel species, with very bright coloured elytra. Antennæ moderately long and stout, gently thickened towards the apex, the two or three basal joints reddish-yellow, the rest pitchy; joints two and three moderately long and stout, of about equal length, four and five nearly equal to one another, each longer than broad, six about as long as broad, seven to ten a little transverse; eleventh joint about twice as long as the tenth. Palpi obscurely testaceous. Head a little narrower than the thorax, dull; the upper surface not convex, deeply impressed in the male, its sculpture fine, close and indistinct. Thorax variable in colour, black, reddish or yellow; scarcely narrower than the elytra, but little broader than long, very little narrowed behind, very finely and densely punctured, with a distinct central longitudinal channel. The elytra are but little longer than the thorax, reddish-yellow, slightly obscured about the scutellum, very thickly and finely punctured. The abdomen is black, and, with the exception of the sixth segment, dull, segments two to five are densely and finely punctured, sixth segment rather sparingly punctured. Legs yellow.

In the male, the sixth segment of the abdomen has on the upper surface ten or twelve small elevations, irregularly placed; the seventh segment is furnished before the apex with a row of four short raised lines, and the hind margin itself has in the middle two other lines projecting a little beyond the margin, and on each side of these are one or two similar, but much smaller, and more indistinct lines.

Found in damp places both in England and Scotland, but not common.

Obs.—The brightly coloured elytra and legs, together with the flat parallel form, and the close and fine punctuation of this species, should prevent its being confounded with any other of the genus.

49. *Homalota linearis.*

Subnitida, nigra, antennis basi testaceis, apicem versus infuscatis, elytris brunneis, pedibus anoque testaceis; capite canaliculato; thorace subquadrato, canaliculato; elytris hoc paulo longioribus, evidenter, sat crebre, punctatis; abdomine basi vix crebre punctato, apice fere lævigato. Long. $1\frac{1}{2}$ lin.

Mas; fronte antice late impressa.

Aleochara linearis, Grav. Micr. 69; *H. linearis*, Er. Gen. et Spec. Staph. 91; Kr. Ins. Deutsch. ii. 240; Wat. Cat.; *Dinarœa linearis*, Th. Sk. Col. ii. 291.

A good deal like *H. œquata*, but much more shining, with more sparingly punctured abdomen, &c. Antennæ moderately stout, a little thickened towards the apex, furnished distinctly with projecting hairs, the basal three joints yellow, the others dirty yellow; first joint stout, two and three of nearly equal length, fourth joint not so broad as the fifth, six to ten each broader than long; eleventh about half as long again as the tenth. Head a little narrower than the thorax, not very shining, flat above, with a longitudinal impression on the middle; in the male, with a broad shallow impression between the eyes; rather sparingly and not distinctly punctured. Thorax but little narrower than the elytra, about one-fourth broader than long, slightly narrowed behind, moderately shining, pretty densely and finely punctate, with a broad and distinct longitudinal channel. Elytra a little longer than the thorax, brown, punctuation more evident than on the head and thorax. Abdomen with segments two to four rather sparingly and finely punctured, five and six almost impunctate and shining, apex obscurely testaceous. Legs yellow.

It is not easy to distinguish the male from the female by the structure of the abdomen; but, in the former sex, the front of the head is broadly impressed.

Generally distributed in England and Scotland: found under bark of dead trees, and in moss in woods.

50. *Homalota pilicornis.*

Subdepressa, nitidula, antennis verticillato-pilosis, nigra, antennarum basi pedibus anoque rufo-testaceis, elytris brunneis; thorace transversim subquadrato; abdomine segmentis 2-4 subtiliter haud crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. $1\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali margine posteriore incrassato, obsoletissime crenulato; ventrali apice rotundato.

Fem.; abdomine segmento 7° dorsali apice late obsolete emarginato, angulis externis acutis; ventrali apice medio emarginato.

H. pilicornis, Th. Öfv. Vet. Ac. Förh. 1852, p. 142; *Atheta pilicornis*, Th. Sk. Col. iii. 82. *H. pilosa*, Kr. Ins. Deutsch. ii. 241; Wat. Cat.

A species not much resembling the preceding ones; somewhat like a broad flat *H. elongatula*, but readily distinguished by the antennæ being furnished with long projecting hairs, more distinctly than is usual in the genus. The antennæ are moderately stout, gently thickened towards the apex, the basal three joints rather elongate, lighter in colour than the following ones; joint three longer than two, four to ten each a little broader than its predecessor, four to six about as long as broad, seven to ten transverse; eleventh joint about half as long again as the tenth. Head rather broad and short, narrower than the thorax, somewhat narrowed behind, rather shining, finely and sparingly punctured, sometimes with an impression or channel on the disc. Thorax a little narrower than the elytra, rather flat, more than one-third broader than long, a little narrowed behind, finely and not densely punctured. The elytra are rather longer than the thorax, brownish, not densely but distinctly punctured, and finely alutaceous. The abdomen is black and shining, reddish-yellow at the extremity, segments two to four finely and not densely punctured, fifth segment more sparingly punctured, sixth almost impunctate; the sides and apex distinctly furnished with long exserted hairs. Legs clear yellow.

In the male, the dorsal plate of the seventh abdominal segment has the apex truncate, but with the posterior margin not quite straight; this margin is distinctly thickened, and indistinctly crenulate. The under plate of the seventh segment has the hind margin gently rounded.

In the female, the seventh segment above has the posterior margin broadly but shallowly emarginate, and terminates on each side in a small sharp projection; on the under side the same segment has the posterior margin emarginate, and furnished densely with short parallel cilia.

Rare. Rannoch; and Hampstead, near London.

Obs.—This species is, I think, best placed here; though, in some respects, it is allied to *H. xanthoptera*.

51. *Homalota debilis.*

Linearis, subdepressa, nigro-fusca, antennis ore pedibus anoque testaceis, elytris fusco-testaceis; thorace subquadrato, basin versus leviter angustato; abdomine supra segmentis 2-4 subtiliter sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long 1⅓ lin.

Mas; abdomine segmento 7° ventrali producto, apicem versus haud angustato.

H. debilis, Er. Käf. Brand. i. 321; Gen. et Spec. Staph. 94; Kr. Ins. Deutsch. ii. 243; Wat. Cat.; *Atheta debilis*, Th. Sk. Col. iii. 72.

Allied to *H. elongatula*, but smaller and more slender, with broader head, and stouter antennæ; brighter coloured, and with the thorax more narrowed behind, &c. Antennæ yellow, rather longer than the head and thorax, a little thickened towards the apex; joints one to three moderately long, three scarcely so long as two, four to ten each a little stouter than the preceding one, four and five rather slender, six about as long as broad, seven to ten each broader than long; eleventh joint rounded. Mandibles and palpi yellow. Head rather short and broad, but little narrower than the thorax, finely and indistinctly punctured. The thorax is scarcely narrower than the elytra, gently but distinctly narrowed behind, about one-fourth broader than long, finely and closely punctured, with an indistinct longitudinal channel. Elytra a third longer than the thorax, of a brownish or yellowish colour, finely and pretty densely punctured. The abdomen is black, with the extremity yellow; segments two to four finely and moderately closely punctured, fifth segment sparingly punctured, sixth almost impunctate. Legs clear yellow.

In the male, the ventral plate of the seventh segment of the abdomen is produced considerably beyond the upper plate; its sides are parallel, so that it is not narrowed towards the apex, which is truncate, with the angles rounded.

In marshy places in England and Scotland, but not common.

52. *Homalota fallaciosa.*

Nigro-fusca, antennis ore anoque obscure testaceis, pedibus testaceis, elytris fuscis; capite thorace angustiore,

suborbiculato, medio canalicula brevi impresso; thorace transversim subquadrato, basin versus vix angustato; elytris thorace paulo longioribus; abdomine supra segmentis 2-4 subtiliter sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. $1\frac{1}{2}$ lin.

Mas; abdomine segmento 7° ventrali producto, apicem versus angustato, apice rotundato.

Allied to *H. debilis*, but less depressed, more robust, neither so shining nor so brightly coloured, with narrower more orbiculate head, shorter elytra, different abdominal structure in the male, &c. Antennæ a little longer than the head and thorax, obscure testaceous, the basal joints testaceous; a little thickened towards the apex; joints one to three moderately long, three not so long as two, four to ten each slightly broader than its predecessor, four to six about as long as broad, seven to ten scarcely so long as broad; eleventh joint short, scarcely half as long again as the tenth. Mandibles and palpi obscure yellow. Head considerably narrower than the thorax, a little narrowed in front, with a distinct short channel on the disc, finely and indistinctly punctured. Thorax a little narrower than the elytra, quite one-third broader than long, transversely convex, but little narrowed behind, with a scarcely visible impression in front of the base in the middle, finely and closely punctured. Elytra scarcely one-fourth longer than the thorax, broader than long, thickly and finely punctured, brownish or pitchy-brown. Abdomen black, with the apex yellowish, segments two to four moderately closely and finely punctured, fifth segment sparingly punctured, sixth nearly impunctate. Legs yellow.

In the male, the channel on the head is more distinct, the ventral plate of the seventh abdominal segment is distinctly produced beyond the dorsal plate, and it is narrowed towards the hind margin, which is rounded.

Rare. I have found it only in Scotland; Rannoch, and Thornhill.

Obs.—This species resembles some of the varieties of *H. volans*, but is readily distinguished by its shorter and stouter antennæ, with transverse penultimate joints. It also somewhat resembles *H. Aubei*, Bris., and is distinguished by its shorter antennæ, less punctured abdomen, &c. Its place is certainly next *H. debilis*.

53. *Homalota deformis.*

Linearis, depressa, confertim subtiliter punctata, picea, thorace elytrisque fusco-testaceis, antennis ano pedibusque testaceis; thorace transversim subquadrato, basin versus angustato; abdomine supra segmentis 2-4 subtiliter haud confertim punctatis, 5° parcius punctato, 6° fere lævigato. Long. 1 lin.

Mas; abdomine segmento 7° apice rotundato.

Fem.; abdomine segmento 7° apice medio obsolete emarginato.

H. deformis, Kr. Ins. Deutsch. ii. 244.

An immature looking species, like *H. debilis,* but much smaller and paler. Antennæ pale testaceous, stout for the size of the insect, thickened towards the apex; joint three not so long as two, seven to ten distinctly transverse. Head a little narrower than the thorax, finely and indistinctly punctured; thorax nearly as broad as the elytra, about one-third broader than long, a little narrowed behind, thickly and finely punctured, with a shallow, broad, longitudinal channel down the middle. Elytra about a fourth longer than the thorax, thickly and finely punctured. Abdomen with segments two to four finely and not densely punctured, fifth segment sparingly punctured, sixth nearly impunctate. Legs pale yellow.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is gently rounded, while in the female it is widely but indistinctly emarginate in the middle.

Rare: in the collections of Mr. Waterhouse, Dr. Power, and Mr. Crotch.

Obs.—The small size and stout antennæ, parallel and depressed form, and the apparently immature colouring, should prevent this species being mistaken for any other of the genus.

54. *Homalota cæsula.*

Nigro-fusca, nitidula, elytris antennisque fuscis, pedibus testaceis, subtiliter punctata; thorace subquadrato; elytris hoc brevioribus; abdomine supra basi obsolete punctato, apice lævigato. Long. $\frac{3}{5}$ lin.

Mas; abdomine segmento 7° ventrali producto, apice fere truncato.

H. cæsula, Er. Gen. et Spec. Staph. 97; Kr. Ins. Deutsch. ii. 328; Wat. Cat. *Sipalia brachyptera*, Th. Sk. Col. iii. 105.

The small size and short elytra of this species distinguish it from all others. It is pitchy-black, with the elytra a little paler. The antennæ are pitchy or obscurely testaceous, a little thickened towards the apex; joint three shorter than two, six to ten transverse; eleventh joint rather large, nearly twice as long as the tenth. Head shining, almost impunctate, but little narrower than the thorax, narrowed towards the front. Thorax almost wider than the elytra, about a fourth broader than long, scarcely narrowed behind, very finely and rather sparingly punctured. Elytra shorter than the thorax, and rather more distinctly punctured. Abdomen shining, a little narrowed at the base, segments two to four sparingly and very obsoletely punctured, sixth and seventh impunctate. Legs yellowish.

In the male, the ventral plate of the seventh segment of the abdomen is very distinctly produced, its apex truncate, with the angles rounded; in this sex also there is sometimes to be seen an indistinct, broad, longitudinal impression on the thorax.

Very local. At the roots of grass in sandy places. Deal, Thetford.

Section C.

Group VIII. *Convex, or but little depressed species.* (Species 55—59).

The species of this group are all peculiar, and by no means closely allied. *H. circellaris* is found everywhere, among moss, &c. The other species are all so rare that I can give no sufficient information as to their habits.

55. *Homalota circellaris.*

Rufescens, abdomine piceo, antennis pedibusque testaceis; capite ovato, thorace subquadrato, elytris hoc brevioribus; abdomine supra segmentis 2-4 subtiliter crebre punctatis, 5 et 6 fere lævigatis. Long. 1⅓ lin.

Mas; elytris basi utrinque prope suturam tuberculatis; abdomine segmento 6° supra, medio ante apicem, tuber-

culo elongato elevato, segmento 7° apice medio obsolete bituberculato.

Aleochara circellaris, Grav. Mon. 155; *H. circellaris*, Er. Gen. et Spec. Staph. 98; Kr. Ins. Deutsch. ii. 326; Wat. Cat.; *Geostiba circellaris*, Th. Sk. Col. iii. 104.

A very abundant and well-known species. Reddish-yellow, or reddish-brown, with the abdomen darker. Antennæ yellow, stout, thickened towards the apex; first joint not much longer, but stouter than the second, three nearly as long as two, four to ten each distinctly stouter than its predecessor, four and five each about as long as broad, six to ten transverse, the tenth strongly so; eleventh joint about as long as the two preceding. Head rather long and narrow, ovate, a little narrowed towards the front, narrower than the thorax, almost impunctate. Thorax but little narrower than the elytra, its length almost greater than its breadth, very slightly narrowed behind, the base not truncate, but a little produced in front of the scutellum, very finely and closely punctured, with a slight impression in front of the scutellum. Elytra shorter than the thorax, closely and rather strongly punctured. Abdomen pitchy, the base and apex paler, segments two to four finely and moderately thickly punctured, five and six almost impunctate. Legs yellow.

In the male, each elytron is furnished at the base, near the suture, with a distinct elevation. The upper surface of the sixth segment of the abdomen is provided, before the apex in the middle, with a raised linear tubercle, and the hind margin of the seventh segment is indistinctly bituberculate in the middle.

Very abundant everywhere.

Obs.—The narrow form, reddish colour stout antennæ, and short elytra, are characters of themselves sufficient to distinguish this anomalous, but vulgar species, from all others.

56. *Homalota elegantula.*

Subdepressa, nitidula, piceo-rufa, capite abdomineque cingulo piceis, elytris pedibus anoque rufo-testaceis; antennis articulis fortiter transversis; capite thoraceque parce fortiter punctatis, hoc canaliculato; elytris alutaceis; abdomine fere lævigato. Long. $1\frac{2}{3}$ lin.

Mas; latet.

Fem.; abdomine segmento 7° ventrali, apice medio, late obsolete emarginato.

H. elegantula, Brisout, Cat. Grenier, Mat. p. 24.

A remarkable and very distinct species; flat, and moderately broad, of a reddish-yellow colour, with the head and abdomen more or less pitchy. Antennæ reddish-yellow, stout, much thickened towards the apex; first joint rather long and stout, second considerably longer than the third, four to ten short and broad, each one broader than long, the tenth twice as broad as long; eleventh joint about as long as the two preceding together; they are furnished throughout their length with rather long projecting hairs. Head rather elongate, with the sides parallel, narrower than the thorax, pitchy, with the mandibles and palpi reddish-yellow, distinctly and strongly, but not closely punctured, with a channel or impression on the middle of the upper side. Thorax reddish-yellow, more or less suffused with a darker colour, about as long as broad, slightly narrowed behind, rather coarsely and moderately densely punctured, alutaceous between the punctures, with a distinct central longitudinal channel. Elytra reddish-yellow, fully one-third longer than the thorax, alutaceous, but scarcely punctured, with a moderately long and rather sparing pubescence. Abdomen almost impunctate, but with the segments sparingly furnished with distinct hairs; reddish-yellow, more or less pitchy in the middle. Legs yellow.

I am unable to distinguish satisfactorily the male of this species: but in one specimen, which I have no doubt is a female, the ventral plate of the seventh segment of the abdomen has the hind margin a little emarginate in the middle.

I have seen but three or four specimens of this remarkable species; they were taken by Mr. Crotch at Monk's Wood.

Obs.—These specimens agree well with Brisout's description of *H. elegantula;* moreover, an example sent by Mr. Crotch to M. Brisout, was returned with a label, "*elegantula*, mihi," attached. Its peculiar colour, broad antennæ, strongly punctured head and thorax, and impunctate abdomen, should distinguish it from all others. Its nearest ally is the following species.

57. *Homalota rufo-testacea.*

Rufo-testacea, capite abdomineque cingulo piceis; capite thorace elytrisque alutaceis, obsolete vix evidenter punctatis; abdomine nitidulo, lævigato. Long. $1\frac{1}{3}$ lin.

H. rufo-testacea, Kr. Ins. Deutsch. ii. 245. *H. atricapilla*, Muls. Opusc. i. 21 (*nec* Bohem.); *Aleuonota atricapilla*, Th. Sk. Col. iii. 53.

A brightly coloured, rather narrow species, with stout antennæ. These are entirely yellow, thickened towards the apex; second joint distinctly longer than the third, four to ten each strongly transverse, and each broader than its predecessor; eleventh joint nearly as long as the two preceding ones. Head pitchy, with the mandibles and palpi yellow, narrow in proportion to its length, narrower than the thorax, its sides nearly parallel, obsoletely punctured. The thorax is narrower than the elytra, about as broad as long, slightly narrowed behind, rather dull, alutaceous, very obsoletely punctured, and with a fine and not very distinct longitudinal channel. The elytra are about a third longer than the thorax, alutaceous. The abdomen is reddish-yellow, the fifth segment and base of the sixth pitchy, shining and impunctate. Legs yellow.

I am unable to give any characters for the male of this species; I have, indeed, seen but one British specimen, which was taken at Mickleham, by Mr. Champion. Its narrower and less depressed form, and indistinctly punctured head and thorax, readily distinguish it from *H. elegantula*.

58. *Homalota splendens.*

Linearis, sat convexa, nitidula, fere impunctata, picea, capite nigro, elytris brunneo-testaceis, antennis ano pedibusque testaceis; thorace subquadrato, elytris hoc paulo longioribus. Long. $1\frac{1}{4}$ lin.

H. splendens, Kr. Ins. Deutsch. ii. 246.

A narrow, shining, delicately pubescent, and almost impunctate species, with stout entirely yellow antennæ. These are thickened towards the apex, third joint nearly as long as the second, four a little broader than three, transverse and very short, four to ten each broader

than its predecessor, and distinctly transverse, penultimate joints strongly transverse; eleventh joint large, as long as the two preceding. Mandibles and palpi yellow. Head black and shining, narrower than the thorax, rather long in proportion to its width, moderately convex above, without impression, impunctate, but with a slight pubescence. Thorax quadrate, not quite so long as broad, the sides nearly straight, scarcely perceptibly narrowed behind, of a pitchy colour, almost impunctate, and with a delicate pubescence. Elytra about a fourth longer than the thorax, yellowish or brownish in colour, not entirely impunctate, but with the sculpture scarcely visible, pubescence sparing. Abdomen pitchy in the middle, paler at the apex, and with the fifth and sixth segments rather darker than the preceding ones, shining and impunctate.

The three specimens of this species I have seen, are, I think, all females; they have the posterior margins of the upper and under plates of the seventh abdominal segment gently rounded.

Very rare. I have captured a specimen in the chalk-pit at Charlton, in May, and it is also in Mr. Crotch's collection. These specimens accord with an example of *H. splendens* sent by Kraatz to the British Museum.

59. *Homalota cegra.*

Nitidula, subtilissime pubescens, vix visibiliter punctata, picea, capite abdomineque nigro-piceis, pedibus piceo-testaceis; thorace transversim subquadrato, elytris hoc longioribus. Long. vix 1 lin.

H. cegra, Heer, Faun. Col. Helv. 595; Kr. Ins. Deutsch. ii. 249; Wat. Cat.

A small, dark-coloured, shining, almost impunctate species, with delicate but distinct pubescence. Antennæ pitchy in colour, moderately stout, a little thickened towards the apex; joint three not so long as two, four about as long as broad, five to ten transverse, the first of them slightly so, the last of them distinctly; eleventh joint rather short and broad, not quite so long as the two preceding together. Head black, with the mandibles and palpi pitchy, a little narrower than the thorax, shining, impunctate, and with a delicate pubescence. Thorax a little narrower than the elytra, one-third broader than

long, but slightly narrowed behind, impunctate, and with a delicate pubescence. The elytra are about a third longer than the thorax, very obsoletely punctured. Abdomen pitchy-black, shining, almost impunctate, but with a distinct pubescence. Legs dirty yellow.

In the male, the upper and under plates of the seventh segment of the abdomen are narrower than in the female, and the under one is a little more produced.

This species is rare, but I have found single specimens in several localities. Brighton, Cambridge, Edinburgh, London.

Obs.—This species is readily distinguished from *H. splendens* by its smaller size, darker colour, slenderer antennæ, &c.; on account of its almost impunctate surface it is readily distinguished from most others of the genus. *H. atomaria* resembles it in this respect, but, to say nothing of other characters, is easily separated by its smaller size. *H. luctuosa*, Muls., is extremely closely allied to *H. ægra*, but I have not as yet seen a British example of it.

Group IX. *Very flat species.*

(Species 60—63).

The three species with whose habits I am acquainted are all found under bark. *H. cribriceps* is a most remarkable insect, about which I can give no information; its colour is different from that of the other species, and gives it some resemblance to *H. boletobia*.

60. *Homalota immersa.*

Depressa, nigra, antennarum basi tibiisque testaceis, femoribus piceis; capite transverso, postice truncato; thorace subquadrato, basin versus angustato; abdomine supra parce obsolete punctato. Long. $\frac{4}{5}$ lin.

H. immersa, Er. Käf. Brand. i. 324; Gen. et Spec. Staph. 96; Kr. Ins. Deutsch. ii. 252; Wat. Cat. *Dadobia planicollis*, Th. Sk. Col. ii. 287.

A very depressed species, readily known by the peculiar shape of its head. Antennæ pitchy, with the first and second joints yellow, but little thickened towards the apex; joint one longer than two, three shorter and more slender than two, scarcely half as long as the first, four to

ten differing but little in length and breadth, the first three or four of them each about as long as broad, the remainder slightly transverse; eleventh joint oblong, rather long, twice as long as the tenth. Head broad, about as broad as the thorax, straight behind, the posterior angles nearly right angles, flat, and dullish above, punctuation indistinct and sparing. Thorax as long as broad, narrower than the elytra, evidently narrowed behind, flat above, sometimes even with the disc depressed, rather dull, obsoletely and sparingly punctured. Elytra a third longer than the thorax, longer than broad, indistinctly and not densely punctured, the punctuation more evident than on the head and thorax. Abdomen black, a little narrowed at the base, punctuation sparing, and scarcely visible. Thighs pitchy; tibiæ and tarsi testaceous.

I am unable satisfactorily to distinguish the males from the females of this species.

Rather common in the North under the bark of fir trees; more rare in the South.

Obs.—A specimen of *H. immersa* sent by Kraatz to the British Museum is undoubtedly identical specifically with our British ones; according to descriptions, however, our specimens appear to be darker than Continental ones.

61. *Homalota cribriceps.*

Lata, subdepressa, nitidula, nigro-picea, antennarum basi pedibusque testaceis, elytris luteis, angulis apicis infuscatis; capite postice crebre fortiter punctato; thorace transverso, lateribus rotundatis, basin versus angustato, crebre fortiter punctato, medioque late impresso; abdomine supra basi sat crebre, apice parce, punctato. Long. $1\frac{1}{4}$ lin.

A most remarkable species, to be compared with no other; allied by the form of its head to *H. plana;* broad, flat, and shining, pitchy-black, with the base of the antennæ, the legs, and the elytra, except the apical angles, yellow. The antennæ are yellow at the base, infuscate outwards, rather short, stout, thickened towards the apex; third joint quite as long as the second, fourth nearly quadrate, much narrower than the fifth, fifth to tenth strongly transverse; eleventh joint stout, as long as the two preceding. Head nearly black, shining, nar-

rowed behind the eyes, which are very large and prominent, very coarsely and closely punctured, but with a smooth impunctate space in the front. Thorax nearly as broad as the elytra, more than half as broad again as long, pitchy-black, almost without pubescence, the sides much rounded and considerably narrowed behind, the posterior angles a little prominent, tho base not truncate, but produced in front of the scutellum, coarsely and closely punctured, especially on the disc, where there is also a broad distinct impression. Elytra pale testaceous, pitchy at the external angles, one-third longer than the thorax, indistinctly punctured. The abdomen is pitchy, paler at the extremity, with very scanty pubescence ; the basal segments moderately closely, the apical ones sparingly punctured. Legs yellow. Tarsi formed as in *H. plana*, but rather longer.

A single specimen (a female, I believe) of this very remarkable species has been submitted to me by Mr. Waterhouse, without any indication of locality. I could well believe it to be an exotic species. From the structure of its antennæ it might be placed in the neighbourhood of *H. subterranea*, but as it is allied to none of the species of that group, and as the shape and punctuation of its head show a distinct affinity with *H. plana*, I have preferred placing it next that species.

62. *Homalota plana.*

Depressa, subopaca, nigra, elytris fuscis, antennis femoribusque piceis, tibiis testaceis ; capite confertim distincte haud profunde punctato ; thorace transversim subquadrato, basin versus leviter angustato ; abdomine supra segmentis 2-4 subtiliter haud crebre punctatis, 5 et 6 fere lævigatis. Long. $1\frac{1}{4}$ lin.

Mas ; abdomine segmento 6° medio ante apicem tuberculo parvo, 7° lineis elevatis duabus instructo.

Aleochara plana, Gyll. Ins. Suec. ii. 402. *H. plana*, Er. Gen. et Spec. Staph. 93 ; Kr. Ins. Deutsch. ii. 250 ; Th. Sk. Col. ii. 285 ; Wat. Cat.

A flat, broad, and dull species. Antennæ not quite so long as the head and thorax, rather stout, pitchy ; first joint about as long as the second and third together, three nearly as long as two, four small, about as long as

broad, five considerably broader than four, five to ten transverse; eleventh joint rather short. Head large, but little narrower than the thorax, a little rounded behind the eyes, which are large and rather prominent, dull, closely and distinctly though not deeply punctured. Thorax a little narrower than the elytra, about a fourth broader than long, a little narrowed in front, and slightly more so towards the base, with an indistinct longitudinal channel along the middle, dull, obsoletely but closely punctured. Elytra of a lurid brownish colour, fully one-third longer than the thorax, densely but extremely finely punctured. Abdomen black (sometimes with the extremity pale), segments two and three finely and not densely punctured, four rather more sparingly punctured, five and six almost impunctate. Thighs pitchy, tibiæ and tarsi testaceous.

In the male, the sixth segment of the abdomen is furnished, on the upper side in the middle, before the posterior margin, with a small raised tubercle; the seventh segment has two raised longitudinal lines on its surface, the space between which is rather depressed, especially just before the hind margin, and the lines project a little beyond the margin in the form of two small indistinct teeth.

Rather common in England, under the bark of dead elm trees.

Obs.—This species may be distinguished from all others by its distinctly and thickly punctured head, taken in conjunction with its flat broad form, and dull appearance.

In Thomson's arrangement, the genus *Homalota* is reduced to this one species.

63. *Homalota cuspidata.*

Angusta, parallela, depressa, picea, pedibus testaceis; thorace subquadrato; abdomine segmento 7° apice in utroque sexu acute mucronato. Long. $\frac{3}{4}$ lin.

Mas; abdomine supra segmentis 3-5 utrinque tuberculo armatis.

H. cuspidata, Er. Gen. et Spec. Staph. 96; Kr. Ins. Deutsch. ii. 253; Wat. Cat.; *Thectura cuspidata,* Th. Sk. Col. ii. 286.

A small, narrow, flat, and parallel species, distinguished from all others by the long sharp spine, projecting backwards from the middle of the extremity of the upper plate of the seventh abdominal segment. Antennæ short, thickened towards the apex, joints four to ten each distinctly transverse. Head about as broad as the thorax, quadrate, flat, with the sides parallel, closely and distinctly punctured. Thorax a little narrower than the elytra, about one-fourth broader than long; its sides nearly straight, finely and pretty densely punctured, with an indistinct longitudinal channel. Elytra about half as long again as the thorax, finely and pretty densely punctured. Abdomen with the basal segments finely and not densely punctured, the apical segments impunctate, the sixth with an ill-defined broad transverse impression, the apex of the seventh furnished in the middle with a long spine projecting backwards, and on each side with a smaller, easily overlooked, sharp spine. Legs yellow, the tarsi short.

In the male, the third, fourth, and fifth segments of the abdomen have each on the upper side a pair of tubercles, and the spines at the extremity of the seventh segment are larger and more distinct than in the female.

Not uncommon in England, under the bark of decaying oak trees.

Section D.

Group X. *The sixth segment of the abdomen punctured sparingly, or not at all; antennæ moderately long, not stout.* (Species 64—67).

The short thorax of the species of this group prevents their being arranged with *H. elongatula*, while the structure of their antennæ (thinner, and with a well developed fourth joint) separates them from *H. fungicola*. The four species are all found amongst moss, and are apparently gregarious.

64. *Homalota eremita.*

Piceo-nigra, antennis pedibusque obscure testaceis, subtiliter sat crebre punctata; antennis sat elongatis,

apicem versus vix incrassatis; thorace transverso, basi impresso, plus minusve distincte canaliculato; elytris thoracis longitudinis; abdomine segmentis 2-4 evidenter sat crebre punctatis, 5° parcius punctato. Long. $1\frac{1}{2}$-$1\frac{2}{3}$ lin.

Mas; abdomine segmento 7° ventrali producto, apicem versus angustato.

H. eremita, Rye, Ent. Month. Mag. iii. 123 (1866).

Var.—Capite canaliculato.

An anomalous species, very difficult to place satisfactorily; allied as it is at the same time to such different species as *elongatula, fungi,* and *gemina;* it is also a variable species in size, colour, and the channelling of the head and thorax. Pitchy-black, with the elytra slightly paler, the antennæ and legs obscurely testaceous. Antennæ moderately long, very little thickened towards the apex; first joint rather stout, two and three moderately long, three longer than two, but not quite so long as the first joint, four to ten differing but little from one another, four slender and longer than broad, ten about as long as broad; eleventh joint rather long, nearly as long as the two preceding. Head rather broad and short, but considerably narrower than the thorax, a little broader behind the eyes, which are small and not prominent, finely and indistinctly punctured. Thorax as broad as, or even broader than, the elytra, about half as broad again as long, the sides a little rounded in front, scarcely narrowed behind, in the middle in front of the base with an impression, which is generally continued forwards as a longitudinal channel, very finely but not very densely punctured. Elytra about as long as the thorax, finely and pretty densely punctured, the punctuation more distinct than on the thorax. Abdomen black, shining towards the apex, and furnished there with numerous and pretty distinct hairs, segments two to four finely but distinctly and not closely punctured, fifth segment sparingly punctured, sixth almost impunctate. Legs dirty testaceous, thighs darker than the tibiæ, posterior tarsi rather long and slender.

In the male, the head and thorax are generally more distinctly channelled than in the female; the third joint of the antennæ is a little stouter; and the under plate of the seventh abdominal segment is considerably produced, and narrowed towards the apex.

Common in moss in the hilly districts of Scotland.

Obs.—As *H. Aubei* is in some respects intermediate between *eremita* and *gemina*, I have associated the three species together in the present position, as being, perhaps, the one least open to objection for them. The transverse and broad thorax separates *H. eremita* from the *elongatula* group; the stouter and more developed antennæ, the flatter and more parallel form, from *H. fungi*.

65. *Homalota Aubei.*

Nigro-fusca, antennarum basi pedibusque sordide testaceis; capite canaliculato, thorace multo minore; hoc transverso, canaliculato; abdomine supra segmentis 2-5 confertim subtiliter punctatis, 6° parce punctato. Long. $1\frac{1}{3}$ lin.

H. Aubei, Brisout, Ann. Soc. Ent. Fr. 1860, p. 339.

A good deal like *H. gemina*, but twice the size, and with the thorax channelled, and the fifth segment of the abdomen punctured. Also much like some of the varieties of *H. volans*, but with shorter and broader thorax, and more closely punctured abdomen. Antennæ longer than the head and thorax, slightly thickened towards the apex, of a pitchy colour, with the two or three basal joints paler; two and three of nearly equal length, four to ten differing but little in length, four rather slender, longer than broad, five to nine also each longer than broad, ten about as long as broad; eleventh joint half as long again as the tenth. Head much smaller than the thorax, round, a little wider behind the eyes, finely and indistinctly punctured, with a distinct longitudinal channel, sometimes short and sometimes longer (the male probably); mandibles and palpi pitchy. The thorax is but little narrower than the elytra, nearly half as broad again as long, the sides gently rounded, almost more narrowed in front than behind, at the base in the middle with an obscure impression, from which proceeds a central longitudinal channel, fine and not very distinct; closely and finely punctured. Elytra about one-third or fourth longer than the thorax, closely and finely punctured. Abdomen with segments two three and four finely and densely punctured, fifth segment rather more sparingly punctured, sixth very sparingly punctured. Legs dirty testaceous.

I am not able to point out satisfactory abdominal characters to separate the male from the female, but the male appears to have the front of the head flattened, and the longitudinal channel extending quite to the back.

Rare. I have found the species at Horning in Norfolk, and there are specimens in Mr. Crotch's collection, probably from the same locality. It has also been found by Mr. Hislop in Scotland.

Obs.—I am much indebted to M. Ch. Brisout de Barneville for an opportunity of examining his types of *H. Aubei;* they agree with my British examples: and I consider the species is best placed near *H. gemina,* to which it is more allied in structure than to any other of the genus.

66. *Homalota gemina.*

Nigro-fusca, antennis piceis, basi pedibusque fusco-testaceis; antennis sat elongatis, apicem versus vix incrassatis; capite thorace evidenter angustiore; hoc transverso, basi indistincte impresso; elytris thorace longioribus; abdomine supra segmentis 2-4 subtiliter sat crebre punctatis, 5 et 6 parce punctatis. Long. 1 lin.

Mas; capite evidenter canaliculato, abdomine segmento 7° ventrali producto.

H. gemina, Er. Käf. Brand. i. 330; Gen. et Spec. Staph. 112; Kr. Ins. Deutsch. ii. 255; Wat. Cat.

Antennæ fusco-testaceous, with the basal joint lighter; moderately long and stout, but little thickened towards the apex; joints two and three of about equal length, four to ten differing but little in length, and each one only slightly broader than its predecessor, four longer than broad, ten not quite so long as broad; eleventh joint rather long, oblong-ovate, nearly as long as the two preceding joints together. Head considerably smaller than the thorax, round, slightly broader behind the eyes, finely and indistinctly punctured; in the male, with a fine channel in the middle, reaching nearly to the back part, in the female with a very short and indistinct channel. Thorax transverse, nearly half as broad again as long, but little narrower than the elytra; the sides gently rounded, the base as wide as the apex, thickly and very finely punctured, and in front of the scutellum with an obsolete double impression. Elytra about a third longer than the

thorax, punctured closely and finely, but more distinctly than the thorax. Abdomen with segments two to four finely but distinctly and moderately closely punctured, five and six very sparingly punctured, apex indistinctly paler. Legs fusco-testaceous.

In the male, the channel on the head is longer and more distinct than in the female, and the abdomen has the seventh segment underneath more produced and narrower than in the female.

This species appears to be not common; I have found it only at Hammersmith Marshes, and in a marshy place near Thornhill.

Obs.—Compared with typical *H. analis*, *H. gemina* is larger and darker coloured, with longer and stouter antennæ, differently shaped head, and more sparingly punctured abdomen. Two specimens of *H. gemina* sent by Kraatz to the British Museum agree with my British ones.

67. *Homalota curtipennis.*

Nigro-fusca, antennis elytrisque fuscis, illarum basi pedibusque obscure testaceis; capite thorace evidenter angustiore, antice angustato; thorace transverso, basi plus minusve impresso; elytris hoc nonnihil longioribus; abdomine segmentis 2-4 sat crebre punctatis, 5° parcius punctato, 6° fere lævigato. Long. 1 lin.

Mas; fronte plana, capite subtiliter canaliculato, abdomine segmento 7° ventrali paulo elongato.

Fem.; fronte convexiuscula.

Atheta breviceps, Th. Sk. Col. ix. 273 (forte).

Allied to *H. gemina*, but with shorter antennæ and elytra. The antennæ are quite as long as the head and thorax, obscure testaceous, paler at the base, moderately stout, distinctly thickened towards the apex; joint three not quite so long as two, four to ten differing but little in length, but each a little broader than its predecessor, four to six each about as long as broad, seven to ten broader than long; eleventh joint moderately long, nearly twice as long as its predecessor. Head distinctly narrower than the thorax, considerably broader behind the eyes, and narrow in front, finely and indistinctly punctured, flat above and indistinctly channelled in the male,

in the female convex. Thorax about as broad as the elytra, transverse, half as broad again as long, the sides but little rounded, the base about as wide as the apex, closely and very finely punctured; sometimes in the middle before the base with a broad shallow impression, sometimes not impressed. The elytra are scarcely longer than the thorax, generally a little lighter in colour than it, finely and densely punctured. Abdomen black, a little paler at the apex, segments two to four finely but distinctly and moderately densely punctured, fifth segment sparingly punctured, sixth almost impunctate. Legs dirty testaceous.

In the male, the upper surface of the head is flatter than in the female, and channelled; the abdomen has the seventh segment underneath a little longer and narrower.

I have found this species only in Scotland. At Rannoch, on the Pentlands, and near Thornhill. I have not seen any other specimens, except some taken by Mr. Crotch, at Rannoch.

Obs.—*H. curtipennis* can be confounded only with *H. gemina*, but its shorter and stouter antennæ, and shorter elytra readily distinguish it. Thomson's *H. breviceps* may prove identical with it, though I cannot satisfy myself of this from description.

Group XI. *The sixth segment of the abdomen closely punctured; antennæ not very stout.* (Species 68—73).

The following species constitute a natural group, with the exception of *H. vilis*, which, although always associated with *H. analis*, would, perhaps, be better placed in Group III. The species are found amongst moss, and in damp places.

68. *Homalota vilis.*

Linearis, nigro-fusca, antennis elytrisque fuscis, pedibus testaceis; thorace leviter transverso; abdomine supra toto confertim subtiliter punctato. Long. vix 1 lin.

Mas; capite medio impresso, abdomine segmento 7° ventrali paulo elongato.

H. vilis, Er. Käf. Brand. i. 325; Gen. et Spec. Staph. 97; Kr. Ins. Deutsch. ii. 257; Wat. Cat.

Much smaller than *H. gemina*, and with the abdomen throughout thickly and finely punctured. Rather narrow and elongate. The antennæ are longer than the head and thorax, obscurely testaceous, with the first joint a little paler, but slightly thickened towards the apex; third joint not so long as the second, four to ten differ but little either in length or breadth, the tenth about as long as broad; eleventh joint oblong-ovate, nearly as long as the two preceding. Head a little narrower than the thorax, not narrowed towards the front, very finely and indistinctly punctured; in the male with an indistinct impression. The thorax is nearly as broad as the elytra, about one-third broader than long, nearly straight at the sides, very finely and closely punctured. The elytra are a little paler in colour than the head and thorax, about one-third longer than the latter, closely and finely punctured. The abdomen is throughout closely and very finely punctured, paler towards the apex. The legs are yellowish.

In the male, the head is obscurely impressed, and the seventh abdominal segment a little produced underneath.

I have seen only two British specimens of this species; one in Mr. Waterhouse's collection, and one in my own. I captured this specimen in a marshy place near Eltham.

Obs.—*H. vilis* can readily be distinguished from *H. analis* by its longer antennæ, less thickened towards the apex; by its head not broader behind the eyes, as well as by a different facies. With other species it is not very likely to be confounded. Specimens of *H. vilis* sent by Kraatz to the British Museum agree with my example mentioned above.

69. *Homalota analis.*

Nigra, thorace elytrisque piceis, antennis ano pedibusque testaceis; capite subtriangulari; thorace basi foveolato; abdomine supra confertim subtiliter punctato, segmento 7° apice medio in utroque sexu triangulariter emarginato. Long. 1 lin.

Var.—Major, colore obscuriore, antennis longioribus, thorace magis transverso.

Var.—Thorace elytrisque rufis.

Aleochara analis, Grav. Micr. 76; *H. analis*, Er. Gen. et Spec. Staph. 114; Kr. Ins. Deutsh. ii. 256; Wat. Cat.; *Amischa analis*, Th. Sk. Col. ii. 293.

A very abundant and variable species, with thickly punctured abdomen, and peculiarly shaped head. The antennæ are rather short, a little thickened towards the apex; joint three shorter and more slender than two, four much shorter than three, about as broad as long, from this to the tenth the joints differ but little in length, but each one is a little broader than its predecessor, from the sixth onwards each broader than long; eleventh joint rather large, a little broader than the tenth. The head is a little narrower than the thorax, considerably widened behind the eyes, so as to make it somewhat triangular, the upper surface moderately convex, very finely and indistinctly punctured. The thorax is but little narrower than the elytra, one-third broader than long, the sides but little rounded, and scarcely narrowed behind, very finely punctured, and with a fovea in front of the scutellum, sometimes with an indistinct central longitudinal channel. The elytra are a little longer than the thorax, finely and closely punctured. Abdomen more or less pale towards the apex, closely and finely punctured throughout, and the seventh segment has the posterior margin triangularly emarginate in the middle. Legs yellowish.

Varies much in colour; sometimes the thorax and elytra are bright reddish-brown, while at other times the general colour is blackish, with the legs and antennæ pitchy.

A large dark variety occurs, which is often confounded in collections with *H. soror;* this, besides its colour and size, differs from ordinary *H. analis*, by having the joints of the antennæ longer, the thorax broader, flatter, and more transverse, the elytra longer, and not narrowed at the shoulders, and the emargination of the seventh abdominal segment larger. It may possibly prove to be a distinct species, but all the characters mentioned above vary, and after the examination of several hundreds of specimens, I find myself unable to draw any satisfactory line of separation. This large form appears to be commoner in the North than in the South.

It is extremely difficult to separate the sexes of *H. analis*. Kraatz says that a larger triangular notch of the seventh

segment of the abdomen is indicative of the male; this notch certainly varies in size in different individuals, but I am unable to satisfy myself that the difference is sexual.

H. analis is extremely abundant in all sorts of situations all over the country.

70. *Homalota cavifrons.*

Nigra, thorace elytrisque piceis, antennis ano pedibusque testaceis; capite subtriangulari; thorace basi foveolato; elytris thoracis longitudinis; abdomine supra confertim subtiliter punctato, segmento 7° apice medio in utroque sexu triangulariter emarginato. Long. vix 1 lin.

Mas; capite medio late impresso, abdomine segmento 7° ventrali elongato.

This species so greatly resembles the small forms of *H. analis*, that it will be sufficient to point out the characters distinguishing it from that species. These are almost entirely sexual. The upper surface of the head of the male of this species is broadly and very distinctly impressed, whereas it is convex in all specimens of *H. analis;* also in this sex of *H. cavifrons*, the ventral plate of the seventh abdominal segment is considerably produced (as in *H. soror*), and the hind margin is furnished in the middle with a bunch of five or six distinct black hairs. In the female of *H. cavifrons*, the notch of the seventh segment is broader and deeper than in specimens of *H. analis* of the same size; and in both sexes the elytra are shorter, being only of the length of the thorax.

I have found this species only in the hilly districts of Scotland, in the neighbourhood of Edinburgh, and near Thornhill.

71. *Homalota simillima.*

Picea, antennis ano pedibusque testaceis; capite subtriangulari; thorace basi obsolete foveolato; elytris hoc paulo longioribus; abdomine supra undique confertim subtiliter punctato, segmento 7° apice medio in utroque sexu emarginato. Long. vix 1 lin.

Mas; capite impresso, abdomine segmento 7° ventrali elongato.

Very like *H. analis*, and equal in size to the small individuals of it, but of more parallel and flatter form, more unicolorous, and even more finely and densely punctured, so as to be less shining; the thorax is flatter and more transverse, and less distinctly foveolate at the base.

The male is readily distinguished from the female; it has the upper surface of the head deeply impressed, and its abdomen has the seventh ventral segment distinctly produced, and the apex furnished in the middle with five or six distinct black hairs.

Also closely allied to *H. cavifrons*, and possessing similar sexual characters, but more unicolorous, more parallel in form, more densely and finely punctured, with flatter and more transverse thorax, and with the elytra longer than the thorax, and not narrowed at the shoulders.

I have found this species only on the banks of the Nith, and its tributary Cairn Water, under stones, in company with *Scopæus Erichsoni*.

72. *Homalota soror.*

Nigra, antennis fuscis, pedibus fusco-testaceis; capite subtriangulari; thorace basi foveolato; abdomine supra undique dense subtiliter punctato. Long. 1 lin.

Mas; abdomine segmento 7° dorsali apice medio profunde exciso, ventrali elongato.

H. soror, Kr. Ins. Deutsch. ii. 257; Wat. Cat.

Extremely like the large dark form of *H. analis*, and distinguished from such only by its more densely and distinctly punctured abdomen (especially notable towards the apex), and its different sexual characters; the male has the head more or less distinctly channelled; the seventh segment of the abdomen has a much deeper and more distinct notch than has *H. analis;* this notch, too, is of a different shape, and commences on each side much nearer the outside angle of the plate; the ventral plate of the same segment is distinctly produced, and its hind

margin furnished in the middle with five or six distinct black hairs.

Apparently very local, and found hitherto only in the neighhourhood of London, Hammersmith, Barnes, &c.

Obs.—Kraatz says the abdomen is much more finely punctured than in *H. analis*. I find, however, the contrary to be the case. It is possible that Kraatz may have included the following very closely allied species with *H. soror;* this, at least, would account for the discrepancy in question.

73. *Homalota decipiens.*

Nigra, thorace elytrisque piceis, antennis ano pedibusque testaceis; capite subtriangulari; thorace basi foveolato; abdomine supra undique dense subtiliter punctato. Long. 1 lin.

Very closely allied to *H. soror*, and differing from it only by the more finely punctured abdomen, with differently formed seventh segment, and by having the legs, antennæ, and extremity of the abdomen of a clearer yellow colour. It is also, on the average, slightly smaller than *H. soror*.

The male of this species is only to be distinguished from the female by the under plate of the seventh segment of the abdomen being slightly narrower and more elongate than in the female. In neither sex has the posterior margin of the upper plate of this segment any triangular notch; the posterior margin is not, however, completely rounded, but is slightly and indistinctly emarginate.

Not common, though I have found it in several localities in the South. Chatham, Weymouth, Southend, Hammersmith, Charlton. I have also seen it in Mr. Crotch's collection.

Obs.—This species is closely allied to *H. analis*, and is probably confounded with it. It has, however, rather longer elytra, more densely punctured abdomen, which is on this account less shining, and the seventh segment is without the characteristic notch always found in *H. analis*.

Group XII. *The sixth segment of the abdomen not punctured; antennæ stout or very stout.* (Species 74—78).

The very small species forming this group are found amongst moss and leaves, with the exception of *H. parallela*, which is quite confined to the nests of *Formica rufa;* this species has thinner antennæ than the others, and a different facies.

74. *Homalota exilis.*

Parallela, fusca, antennis pedibus anoque testaceis, obsolete punctata, tenuissime pubescens; antennis crassis; thorace leviter transverso; elytris hoc paulo longioribus; abdomine confertim obsoletissime (apicem versus vix visibiliter) punctato. Long. $\frac{4}{5}$ lin.

H. exilis, Er. Käf. Brand. i. 333; Gen. et Spec. Staph. 115; Kr. Ins. Deutsch. ii. 260; Wat. Cat.; *Aleuonota exilis*, Th. Sk. Col. iii. 54.

Var.—Minor, angustior, colore obscuriore, antennis paulo brevioribus.

A remarkable little species, of a pale colour, with short thick antennæ, and extremely fine, scarcely visible punctuation and pubescence. Antennæ testaceous, not quite so long as the head and thorax, stout, thickened towards the apex; third joint triangular, not nearly so long as the second, fourth joint small, broader than long, from this to the tenth the antennæ are considerably thickened, with each joint very transverse; the penultimate joint more than twice as broad as long; eleventh joint broad, double the length of the tenth. Head large, scarcely narrower than the thorax, a little widened behind the eyes, which are small and not at all prominent; very obsoletely punctured, and sometimes with an indistinct longitudinal channel. The thorax is about as wide as the elytra, about one-third broader than long, the sides nearly straight, a little narrowed behind, very finely punctured and pubescent. The elytra are a little longer than the thorax, and rather more distinctly (yet extremely finely) punctured. The abdomen is yellow at the extremity, the middle segments are pitchy, the basal segments sometimes pitchy, sometimes yellow; its punctuation is pretty dense, but extremely fine, and is, towards the apex, scarcely visible. The legs are yellow.

I am not able to point out characters to distinguish the sexes.

Local, but sometimes found in great abundance, especially in early spring. Wimbledon, Edinburgh, &c.

Obs.—A small form of this species occurs, which besides its smaller size, is narrower, and of a more obscure colour, with rather shorter antennæ, and less transverse thorax; a specimen of it sent to Kraatz for examination, some years back, was returned by him as a distinct species, and it is possible it may prove to be so. I have found it in very great abundance on Wimbledon Common, unaccompanied by any of the larger typical form, which indeed appears to be very rare near London.

75. *Homalota pallens.*

Testacea, abdomine ante apicem paulo obscuriore, tenuissime pubescens, obsoletissime punctata. Long. $\frac{2}{3}$ lin.

H. pallens, Redt. Faun. Austr. (ed. i), 662; Kr. Ins. Deutsch. ii. 261.

Extremely like *H. exilis,* but smaller than even the smallest variety of it, and of a uniform pale testaceous colour; the fourth and fifth segments of the abdomen being sometimes a little darker; the punctuation and pubescence are even finer and more delicate than in *H. exilis,* and the elytra are a little shorter than is generally the case in that species.

Rare. Hitherto only found under stones, in rather muddy places, on the banks of the Nith and Avon, in Scotland.

76. *Homalota palleola.*

Testacea, capite elytrisque fusco-testaceis, abdomine ante apicem piceo, nitidula, subtilissime punctata, tenuissime pubescens; abdomine basi parce obsolete punctato, apice lævigato. Long. $\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice truncato.

H. palleola, Er. Käf. Brand. i. 333; Gen. et Spec. Staph. 115; Kr. Ins. Deutsch. ii. 259; Wat. Cat.

A very small, shining, prettily coloured species. Yellowish, with the head and elytra more or less distinctly darker, and the abdomen before the apex pitchy. The antennæ are stout, thickened towards the apex, third

joint considerably more slender and rather shorter than the second, four not quite so long as broad, five to ten each perceptibly broader than it predecessor, and strongly transverse; eleventh joint large, twice as long as the tenth. Head smaller than the thorax, the eyes a little prominent, its punctuation and pubescence almost imperceptible, the upper side with a very small fovea in the middle. The thorax is a little narrower than the elytra, about half as broad again as long, punctuation and pubescence extremely fine and indistinct. The elytra are fully half as long again as the thorax, very finely punctured and pubescent, but rather more distinctly so than the thorax. Abdomen with the penultimate segments pitchy, the base and apex yellow, the basal segments very obsoletely punctured, the apical ones smooth. Legs yellow.

In the male, the apex of the seventh segment above is truncate.

Rare, and hitherto, I believe, found only near Reigate.

Obs.—A specimen of *H. palleola* sent by Kraatz to the British Museum agrees with my English specimens.

77. *Homalota validiuscula.*

Nigra, antennarum basi pedibusque testaceis, thorace elytrisque rufo-testaceis; capite coleopteris angustiore; thorace transversim subquadrato, basi canaliculato; abdomine basi obsolete punctato, apice lævigato. Long. $\frac{3}{4}$ lin.

H. validiuscula, Kr. Ins. Deutsch. ii. 261.

Allied to *H. palleola*, but a little larger, not so depressed or parallel, with the abdomen darker in colour, the head rounder and narrower in proportion to the elytra, and the anterior parts of the body more distinctly punctured and pubescent. Antennæ stout, thickened towards the apex, pale at the base, pitchy outwards; joint three rather shorter than two, narrowed at the base, four to ten each distinctly broader than its predecessor, four slightly transverse, the following ones gradually more strongly so, tenth joint about twice as broad as the fourth; eleventh joint rather large, twice as long as the tenth. Head smaller than the thorax, round, black and shining; very finely and indistinctly punctured, with a short fine pubescence, the upper surface with a small fovea in the male, convex in the female. Thorax narrower than the elytra, a third or fourth broader than long, finely but distinctly

punctured and pubescent, with a short, indistinct, central longitudinal channel behind. Elytra a little longer than the thorax, punctuation and pubescence distinct but fine. Abdomen black, with the apex paler, the basal segments very finely and indistinctly punctured, the apical ones smooth. Legs yellow.

The male has a small fovea on the middle of the head, and the seventh segment of the abdomen has the ventral plate rather longer and narrower, and its apex more rounded, than in the female.

On one occasion, I found this species in numbers on the Braid Hills, Edinburgh, in a ditch among dead leaves early in the spring. I have not seen any other British specimens.

Obs.—I have not seen a specimen of *H. validiuscula* named by Kraatz; though there are several discrepancies when compared with his description, I think the species above described will prove to be identical with Kraatz's. Its less parallel form, differently shaped head, and more distinct punctuation and pubescence, readily distinguish it from *H. exilis*.

78. *Homalota parallela.*

Nigra, antennis pedibus anoque testaceis, elytris brunneis, confertim subtiliter punctata, tenuiter pubescens; thorace transverso, elytris hoc paulo longioribus; abdomine basi parce subtiliter punctato, apice lævigato. Long. vix $\frac{3}{4}$ lin.

Mas; abdomine segmento 7° supra et infra margine posteriore magis rotundato.

Bolitochara parallela, Man. Bull. Mosc. 1844, p. 173 (*teste* Kraatz); *H. parallela,* Kr. Ins. Deutsch. ii. 262; Wat. Cat.; *Amidobia parallela,* Th. Sk. Col. ii. 295.

Likely to be confounded only with *H. analis,* but smaller than the smallest specimens of that species, and readily distinguished by its differently shaped head, and impunctate and shining extremity of the abdomen. The antennæ are yellowish, rather stout, a little thickened towards the apex; joint two longer than three, four nearly quadrate, five to ten transverse; eleventh not so long as the two preceding together. Thorax a little narrower than the elytra, about a third broader than

long, with a scarcely visible fovea in front of the base in the middle, very finely punctured. The elytra are a little longer than the thorax, thickly and finely punctured. The abdomen is black and shining, yellowish at the extremity, the basal segments finely and indistinctly punctured, but with the pubescence pretty distinct, apical segments impunctate. Legs yellow.

In the male, the seventh segment of the abdomen has the hind margin of both the upper and under plates rather more produced and rounded than in the female.

Abundant in the large ants' nests at Rannoch. I am not aware of its occurrence elsewhere in the country.

Section E.

Group XIII. *Large species, with the thoraæ strongly punctured; penultimate joints of the antennæ transverse.* (Species 79—81).

H. brunnea is our only British representative of four or five allied European species, and it is only in order to facilitate reference, that I have associated it with *H. hepatica*, which has a totally different facies. *H. brunnea* is a common species amongst moss, &c. *H. hepatica* I have never found, and *H. exarata* occurs very rarely in nests of *Formica fuliginosa*.

79. *Homalota brunnea.*

Depressa, nitidula, testacea, capite, antennis extrorsum, abdominisque segmentis plus minusve nigro-piceis; capite thoraceque sat fortiter haud crebre punctatis; abdomine supra segmentis 2-4 crebre evidentius punctatis, 5° parcius punctato, 6° fere lævigato. Long. $1\frac{1}{2}$-$2\frac{1}{4}$ lin.

Mas; abdomine segmento 6° dorsali medio ante apicem tuberculo elevato, 7° apice dentibus 4 instructo.

Fem.; abdomine segmento 7° dorsali margine posteriore medio obsolete emarginato.

Staphylinus brunneus, Fab. Ent. Syst. Suppl. 180; *H. brunnea*, Er. Gen. et Spec. Staph. 98; Kr. Ins. Deutsch. ii. 265; Wat. Cat.; *Platarœa brunnea*, Th. Sk. Col. iii. 46. *H. depressa*, Er. Gen. et Spec. Staph. 99; *Platarœa depressa*, Th. Sk. Col. iii. 45.

A large, brightly coloured, and handsome species, flat,

yellowish, with the antennæ towards the apex, the head, and the abdomen more or less, blackish. The antennæ are moderately long, rather slender for the size of the species, but little thickened towards the apex; joints two and three of about equal length, four about as long as broad, from this to the tenth, but little difference between the length and breadth of each joint; in some specimens, however, the penultimate joints are distinctly transverse; the eleventh joint is gently pointed, not quite so long as the two preceding together. Head blackish, with the palpi and parts of the mouth testaceous, considerably smaller than the thorax, flat above, and sometimes obscurely impressed, distinctly but rather distantly punctured, each puncture being distinguishable as a real impression. The thorax is narrower than the elytra, about a third broader than long, the sides nearly straight, rounded towards the anterior and posterior angles, rather strongly and distantly punctured, the disc is flattish, with more or less distinct indications of one or more shallow impressions. The elytra are yellowish, a little darker in the neighbourhood of the scutellum, the punctuation not quite so coarse as that of the thorax, but rather closer. The abdomen is somewhat variable in colour, blackish, the base and apex sometimes obscurely, sometimes distinctly paler; segments two to four are distinctly and pretty densely punctured, fifth segment more sparingly punctured, sixth nearly impunctate. Legs yellow.

In the male, the third joint of the antennæ is stouter than in the female; the sixth segment of the abdomen is furnished above, just before the hind margin, with a distinct raised tubercle; the hind margin of the seventh segment is provided with four distinct teeth, of which the outer ones are the stouter, the two inner ones are rather closer together, and are like tubercles; the hind margin of the same segment, underneath, is more rounded than in the female.

In the female, the hind margin of the seventh dorsal segment is slightly emarginate in the middle.

Rather common in moss and dead leaves throughout the country.

Obs.—This species varies somewhat in colour, size, and punctuation of the head and thorax. Erichson divided it into two species, *H. brunnea* and *depressa*, which are still maintained by Thomson.

80. *Homalota hepatica.*

Nigra, elytris ferrugineis, antennis pedibusque testaceis; antennis sat validis; thorace elytrisque crebre distinctius punctatis, evidenter pubescentibus; abdomine basi parce punctato, apice lævigato. Long. 2-2¼ lin.

Mas; elytris linea prope suturam longitudinaliter elevata; abdomine segmento 6° supra lineis 2 elevatis postice convergentibus instructo.

Fem.; abdomine segmento 7° ventrali margine posteriore medio sat profunde emarginato.

H. hepatica, Er. Gen. et Spec. Staph. 102; Kr. Ins. Deutsch. ii. 268; Wat. Cat.

A fine, large, and robust species. Antennæ yellow, stout, the first three joints elongate, two and three of nearly the same length, four to ten each a little broader than its predecessor, of four and five the length is about equal to the breadth, six to ten distinctly transverse, last joint long and pointed, as long as the two preceding together. Head roundish, smaller than the thorax, rather coarsely but obsoletely punctured. The thorax is nearly as broad as the elytra, about one-third broader than long, the sides rounded in front, then nearly straight behind, distinctly and pretty closely punctured, and with a well-marked yellowish pubescence. The elytra are reddish-brown, rather longer than the thorax, distinctly and pretty closely punctured, and with a well-marked pubescence. The abdomen is black and shining, a little paler at the apex, segments two to four sparingly punctured, fifth segment still more sparingly punctured, sixth nearly impunctate. Legs reddish-yellow.

The male has on each elytron a raised longitudinal line, nearly parallel with the suture, and on the sixth abdominal segment above, two raised lines converging posteriorly. (Kraatz).

The female has the posterior margin of the seventh ventral segment distinctly excised in the middle.

This fine species is rare, but has occurred in several parts of England. All the specimens I have seen are females.

81. *Homalota exarata.*

Linearis, nigro-picea, antennis elytris pedibusque rufo-testaceis, abdomine rufo-piceo; thorace transverso, elytris

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minus crebre sat fortiter punctatis; abdomine fere lævigato. Long. 1⅔ lin.

Mas; elytris prope suturam linea longitudinali elevata instructis.

Allied to *H. hepatica*, but smaller, especially narrower, not so dark in colour, with more slender antennæ, and shorter thorax. The antennæ are unicolorous, reddish-brown, stout, but little thickened towards the apex, basal joints rather long; joints two and three of about equal length, four and five each about as long as broad, six to ten rather transverse; eleventh joint rather long and pointed, about as long as the two preceding together. Head smaller than the thorax, neither finely nor closely punctured, the punctures shallow and indistinct. Thorax pitchy, nearly as broad as the elytra, half as broad again as long, the sides gently rounded in front, scarcely narrowed behind, rather coarsely, pretty densely, and not very distinctly, punctured. Elytra reddish, rather coarsely but indistinctly and not closely punctured, about a fourth longer than the thorax. Abdomen pitchy, the extremity, as well as the margins of the segments reddish, almost impunctate, and sparingly pubescent. Legs yellowish.

The male has a raised fold on each elytron, beginning close to the suture near the hind margin, and getting broader and more indistinct as it proceeds forwards.

Very rare; a few specimens found by Dr. Power and Mr. Brewer, in Tilgate Forest, in the nests of *Formica fuliginosa*, are all I have seen.

Group XIV. *Large species, with the penultimate joints of the antennæ not transverse.* (Species 82—86).

The members of this group form a natural cluster, allied in many respects to Group V. *H. xanthoptera* and *æneicollis* occur in numbers in fungi, and decaying vegetable matter; *H. valida* and *incognita* I have found in heaps of vegetable refuse, while *H. subænea* appears to prefer the neighbourhood of rivers and streams.

82. *Homalota subænea.*

Nigra, capite thoraceque subæneis, antennarum articulo primo pedibusque testaceis, elytris sordide brunneis;

thorace transverso, basi impresso; elytris confertim distinctius granuloso-punctatis; abdomine segmentis 2-4 parce punctatis, 5 et 6 fere lævigatis. Long. $1\frac{1}{2}$-$1\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et crenulato.

An obscurely coloured, rather large species, with the anterior parts dullish, the abdomen shining. The antennæ are moderately long, slender, scarcely thickened towards the apex; black, the basal joints yellowish; joints two and three rather slender, of about equal length, the third being very little the longer of the two, four shorter and more slender than five, five to ten nearly like one another, each a little narrowed towards its base, each a little longer than broad; the eleventh joint is rather long and pointed, not quite so long as the two preceding together. The head is narrower than the thorax, blackish, with a rather dull, brassy appearance, finely and indistinctly punctured. The thorax resembles the head in colour, it is narrower than the elytra, about a third broader than long, the sides gently rounded in front, then very slightly narrowed behind, very finely and not closely punctured, and with a broad shallow impression in front of the scutellum. Elytra about a third longer than the thorax, of a dirty brownish or yellowish-brown colour, slightly darker about the scutellum, closely and distinctly punctured, the sculpture consisting of small roughish elevations; their pubescence is depressed, and pretty distinct. The abdomen is black and shining; segments two to four sparingly but distinctly punctured, five and six almost impunctate. Legs dirty testaceous.

The male has the apex of the seventh segment of the abdomen above, truncate and crenulate, the crenulations are rather large and about eight in number, the outer one on each side the most distinct.

In wet places on the banks of the Scotch rivers, among moss, also sparingly in England.

Obs.—This species may readily be distinguished from *H. xanthoptera,* by the darker antennæ with shorter apical joint, the obscurely brassy colour of the head and thorax, and the more strongly punctured and obscurely coloured elytra. It may possibly prove identical with *Atheta aquatica,* Th., but Thomson describes the male of that species as having the hind margin of the seventh segment furnished with four teeth.

83. *Homalota æneicollis.*

Nigra, nitidula, antennarum basi pedibus elytrisque testaceis, his circa scutellum angulisque apicis infuscatis; thorace transverso, basi obsolete impresso; abdomine supra segmentis 2-4 parcius punctatis, 5 et 6 fere lævigatis. Long. $1\frac{1}{2}$-$1\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et crenulato.

This species is extremely closely allied to *H. xanthoptera*, and I have no doubt is generally confounded with it; it is, on an average, a little smaller than, and not so robust as *H. xanthoptera*. The elytra are paler in colour, and more distinctly marked with black. The antennæ are darker in colour, and neither quite so long, nor quite so stout; they are darker towards the extremity, and the apical joint is not so long, though it bears nearly the same relation to the two preceding ones, as the last joint in *H. xanthoptera* does.

It is an abundant species in decaying vegetable matter, especially in Scotland, where it is commoner than *H. xanthoptera*, and may sometimes be found in numbers without any of that species being associated with it. It is widely distributed, as I have seen it from Naples.

Obs.—I am indebted to M. Ch. Brisout de Barneville, for the loan of his two types (♂ and ♀) of *H. parisiensis;* they are either the above species, or a closely allied one, the differences being, apparently, that these French specimens are rather smaller and narrower, and have the base of the antennæ, and the elytra, of a darker colour, and the antennæ rather more slender. They are rather old rubbed examples, and without the examination of a greater number of specimens, I can express no positive opinion as to their distinctness from the species above described. *

84. *Homalota xanthoptera.*

Nigra, nitidula, antennis articulo ultimo elongato, fusco-testaceis, basi testaceis, elytris pedibusque testaceis; thorace transverso, basi obsolete impresso; abdomine segmentis 2-4 parce punctatis, 5 et 6 fere lævigatis. Long. $1\frac{2}{3}$-2 lin.

Mas; abdomine segmento 7° dorsali apice truncato, et crenulato.

* Since the above was written, I have seen one or two other examples of *H. parisiensis;* they tend to confirm my opinion of its distinctness.

Aleochara xanthoptera, Steph. Ill. Brit. Ent. v. 116 (1832); *H. xanthoptera*, Wat. Cat. *H. socialis*, var. *b*, Er. Gen. et Spec. Staph. 102. *H. merdaria*, Th. Öfv. Vet. Ac. Förh. 1852, p. 141; Kr. Ins. Deutsch. ii. 269; *Athe-ta merdaria*, Th. Sk. Col. iii. 81.

Antennæ long and rather slender, very little thickened towards the apex; yellowish, more or less darker towards the extremity, but with the terminal joint nearly always a little paler than the penultimate one, their pubescence rather distinct; joints one, two, and three moderately long, three slightly longer than two, four about as broad as three, longer than broad, five a little broader than four, from this to the tenth the joints differ but little from one another, each is a little longer than broad, and a little narrowed towards the base; the last joint is elon-gate, nearly the length of the three preceding together, gently pointed, not stouter than the tenth. Head black, with the mandibles and palpi yellowish, considerably narrower than the thorax, rounded behind the eyes, finely and indistinctly punctured. Thorax black and shining, a little narrower than the elytra, fully one-third broader than long, the sides gently rounded in front, then nearly straight behind, finely and pretty closely punctured, with an indistinct impression in front of the scutellum. Ely-tra a third or fourth longer than the thorax, of a chesnut-yellow colour, very indistinctly darker about the scutel-lum and towards the apical angles, pretty closely and finely punctured, and with a soft distinct pubescence. Abdomen black and shining, the extremity sometimes yellow; segments two to four sparingly but distinctly punctured, five and six almost impunctate. Legs bright yellow.

In the male, the hind margin of the upper plate of the seventh abdominal segment is truncate and crenulate, the number of crenulations varies a little, but is generally eight; of these, the outer one on each side is larger than the others; the under plate of this segment is also more produced, and its hind margin more rounded, than in the female.

Common all over the country, in fungi and decaying vegetable matter, especially in the months of August and September; sometimes found at the sap of trees.

Obs.—Stephens' description of *A. xanthoptera*, gives characters by which, considered together, this species

may be distinguished from all others, viz., size, colour, and the elongate terminal joint of the antennæ; and, as his name is many years older than Thomson's *merdaria*, I have adopted it.

85. *Homalota incognita.*

Latior, nigra, antennis pedibusque testaceis, illis apicem versus infuscatis, elytris obscure castaneis; thorace transverso, basi impresso; elytris crebre sat fortiter punctatis; abdomine segmentis 2-4 parce punctatis, 5 et 6 fere lævigatis. Long. 2 lin.

Mas; abdomine segmento 7° dorsali margine posteriore medio truncato, haud crenulato.

A large species, allied to *H. xanthoptera*, usually larger and broader in proportion, the thorax being evidently broader; it is more obscurely coloured, has the elytra more strongly punctured, the fourth joint of the antennæ longer, and the apex of the abdomen not visibly crenulate in the male. The antennæ are long, but slightly thickened towards the apex; yellow at the base, more or less infuscate towards the apex, pretty distinctly furnished with outstanding hairs; joints two and three moderately long and slender, four considerably longer than broad, from this to the tenth the joints differ but little in length, but each is a little stouter than the foregoing one, each longer than broad; the eleventh joint is elongate (especially in the male), longer than the two preceding together, and a little stouter than its predecessor. The head is broad, narrower than the thorax, rounded behind the eyes, finely and indistinctly punctured. The thorax is a little narrower than the elytra, fully a third broader than long, the sides gently rounded in front, then nearly straight, and but very slightly narrowed behind, pretty finely and not densely punctured, with an indistinct impression in front of the scutellum, from which proceeds a short indistinct channel. The elytra are about a fourth longer than the thorax, of an obscure brownish colour, indistinctly darker about the scutellum and towards the apical angles, rather strongly and closely punctured. The abdomen is black and shining, pitchy at the extreme apex; segments two to four sparingly but distinctly punctured, five and six nearly impunctate. Legs yellow.

In the male, the last joint of the antennæ is longer than in the female, the seventh segment of the abdomen has the hind margin of the upper plate quite straight in the middle, but not visibly crenulate; the ventral plate is also more produced, and its posterior margin more rounded, than in the female.

Rare. Rannoch, Edinburgh, Inverness-shire, Thornhill.

Obs.—This species is in some respects intermediate between *H. xanthoptera* and *valida;* it is distinguished from *H. valida* by its more obscure colour, paler antennæ, less coarsely punctured elytra, and the non-crenulate seventh abdominal segment of the male.

86. *Homalota valida.*

Nigra, nitidula, antennarum basi pedibusque testaceis, elytris brunneis, crebre evidenter punctatis; thorace transverso, basi impresso; abdomine supra segmentis 2-4 parce punctatis, 5 et 6 fere lævigatis, ano obscure brunneo. Long. 2 lin.

Mas; abdomine segmento 7° dorsali medio crenulato.

H. valida, Kr. Ins. Deutsch. ii. 274.

A fine large species, the smallest specimens equal in size to *H. xanthoptera.* Antennæ pitchy, with the three basal joints dark yellow, rather long and stout, slightly thickened towards the apex, with a sparing exserted pubescence; joint three rather longer than two, four to ten each slightly broader than its predecessor; in the male each longer than broad, in the female about as long as broad; the terminal joint is elongate and pointed, rather more than the length of the two preceding. The head is black and shining, finely and sparingly punctured. Thorax a little narrower than the elytra, nearly half as broad again as long; black and shining, rather finely and not closely punctured, with a broad shallow impression in front of the scutellum, and sometimes with a fine indistinct channel. Elytra about a fourth longer than the thorax, shining brown, a little darker about the scutellum and towards the external angles, strongly and closely punctured, and with a well marked pubescence. The abdomen is black and shining, scarcely paler at the extremity, segments two to four sparingly but rather coarsely punctured, five and six nearly impunctate. Legs yellow.

In the male, the joints of the antennæ from the fourth onwards are a little longer than in the female, the upper plate of the seventh abdominal segment has the hind margin crenulate, and sometimes slightly emarginate; the crenulations vary in fineness, and are about eight in number; the ventral plate of the same segment is more produced, and has the hind margin more rounded, than in the female.

Rare. Edinburgh, Strath Cannich, Thornhill.

Obs.—I have but little doubt this is the *H. valida* of Kraatz, though I have not seen any specimen of the species so named, except my British ones. It is readily distinguished from *H. xanthoptera* by its darker and more shining colour, its less elongate apical joint to the antennæ, and its more strongly punctured elytra.

Group XV. *Moderately sized, or small species, with the penultimate joints of the antennæ transverse.*

(Species 87—107).

An artificial group, comprising a number of species of very different appearance and size. They occur, however, nearly without exception, in refuse vegetable matter and in fungi; *H. succicola* and *triangulum* prefer the sap of trees, and the latter species is also sometimes found on the coast. *H. succicola* is a large species, while *atomaria* and *perexigua* are amongst the smallest of the genus. *H. palustris* and others are placed by Kraatz near *H. atramentaria*, but the parallel abdomen, and the tibiæ entirely without setæ, make them even more unnaturally placed than in my arrangement.

87. *Homalota succicola.*

Nigra, nitidula, elytris brunneis, pedibus testaceis; antennis articulis 5-10 transversis; thorace transverso, basi impresso; abdomine segmentis 2-4 parce punctatis, 5 et 6 lævigatis. Long. $1\frac{2}{3}$-$1\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et subtiliter crenulato.

H. succicola, Th. Öfv. Vet. Ac. Förh. 1852, p. 141; *Atheta succicola*, Th. Sk. Col. iii. 78. *H. validicornis*, Maerk., Kr. Ins. Deutsch. ii. 271. *H. socialis*, var. *a*, Er. Gen. et Spec. Staph. 102. *H. euryptera*, Wat. Cat.

Compared with *H. xanthoptera*, this species is broader and stouter in proportion, with stouter shorter and darker antennæ, of which the fifth joint is considerably broader than the fourth. The antennæ are nearly black, stout, after the fifth joint not thickened towards the apex; joint three a little longer than two, four small in comparison with the others, about as broad as three, and nearly as long as broad, five considerably broader than four, distinctly transverse, the other joints onwards to the tenth closely resembling it; the eleventh joint is long in proportion to its predecessors, longer than the two preceding together. Head black, rather broad and short, distinctly narrower than the thorax, rounded behind the eyes, finely and indistinctly punctured. Thorax a little narrower than the elytra, quite half as broad again as long, the sides rounded in front, then nearly straight behind, so that it is a little narrower at the anterior than at the posterior angles, pretty finely and not closely punctured, and with a more or less distinct, shallow impression in front of the scutellum. Elytra about a third longer than the thorax, brownish in colour, a little darker about the scutellum, pretty closely and finely punctured. Abdomen black and shining; segments two to four sparingly but pretty distinctly punctured, five and six almost impunctate. Legs not very clear yellow.

In the male, the seventh dorsal segment of the abdomen has the apex truncate and finely crenulate, the number of the crenulations not easy to count, about twelve to sixteen, the outside one on each side a little the larger.

Very common at the sap of trees, and also in other situations throughout the country.

Obs. I.—Kraatz very truly remarks that this species might perhaps be more correctly placed in the next section, but that its nearest allies are in the present group.

Obs. II.—This species is the *H. euryptera* of Mr. Waterhouse's catalogue. As Stephens' description of *Aleochara euryptera* contains nothing peculiarly characteristic of this species, I have not felt justified in adopting this name, to the displacement of another in general use, merely because a specimen is so named in Stephens' cabinet.

88. *Homalota trinotata.*

Nigra, elytris pedibusque testaceis, illis circa scutellum angulisque apicis fuscis; antennis articulis 5-10

transversis; thorace transverso; abdomine segmentis 2-4 subtiliter sat crebre punctatis, 5 et 6 parcius punctatis. Long. 1½ lin.

Mas; abdomine segmento 7° dorsali margine posteriore subtiliter crenulato, utrinque denticulo acuto terminato.

H. trinotata, Kr. Ins. Deutsch. ii. 272; Wat. Cat. *Atheta socialis,* Th. Sk. Col. iii. 76.

A rather shining, and with the exception of the elytra and legs, dark-coloured species. The antennæ are nearly black, pitchy at the base, from the third joint onwards gradually though slightly thickened towards the apex; the three basal joints moderately long, three a little longer than two, four slightly broader than three, about as broad as, or a little broader than long, from this onwards each joint is slightly broader than its predecessor, five to ten distinctly transverse; eleventh joint rather broad, as long as the two preceding together. Head black, moderately shining, finely and indistinctly punctured, narrower than the thorax. Thorax a little narrower than the elytra, half as broad again as long, the sides nearly straight, gently rounded at the anterior angles, finely and not closely punctured, with an indistinct impression in front of the scutellum. Elytra fully a third longer than the thorax, yellowish, with a tolerably well defined, dark, triangular patch at the scutellum, and another on each side near the apical angle, finely and pretty closely punctured. The abdomen is black and shining, segments two to four pretty finely and tolerably closely punctured, fifth segment distinctly but more sparingly, sixth sparingly punctured. Legs yellow.

In the male, the seventh dorsal segment of the abdomen has the posterior margin finely crenulate, but not thickened, the crenulations on each side terminated by a small and not distinct sharper tooth; the ventral plate of the same segment has the posterior margin less straight, more rounded than in the female.

Very abundant in vegetable refuse matter all over the kingdom. Especially fond of foul straw.

Obs.—Seeing the great confusion that exists as to the synonymy of *H. socialis,* and the impossibility of determining with accuracy the exact species to which the name of the older authors should be applied, I have

thought it better to adopt Kraatz's name of *trinotata*. Paykull's *Staphylinus socialis*, may, or may not, be this species, but it is certain from his description, that he confounded more than one species together.

89. *Homalota hybrida.*

Nigro-picea, elytris pedibusque testaceis, illis circa scutellum angulisque apicis obscure fuscis; antennis apicem versus vix incrassatis; thorace transverso, basi obsolete impresso; abdomine segmentis 2-4 subtiliter sat crebre punctatis. Long. $1\frac{1}{2}$ lin.

Mas; antennis articulo penultimo quadrato, abdomine segmento 7° dorsali apice truncato, haud crenulato.

This species is so closely allied to *H. trinotata* that it will be sufficient to point out the characters which distinguish it. Its colour is not so well marked, the black being pitchy, and the elytra obscure yellow, with the markings indistinct. The antennæ are of different structure, being rather more slender, even less thickened towards the apex, and with the terminal joint longer. The male characters are different; in that sex the penultimate joint of the antennæ is markedly longer than in the female, about as long as broad; the seventh dorsal segment of the abdomen has the hind margin non-crenulate, and the ventral plate of the same segment has the hind margin less straight and more rounded than in the female.

I have found this species only near Edinburgh.

Obs.—I have seen but three specimens (two ♂ and one ♀) of this species. The structure of its antennæ seems to me to be quite irreconcileable with the idea of its being a variety of *H. trinotata*. Its shorter more transverse thorax, and broader less parallel form, apart from the ♂ characters, will readily distinguish it from *H. xanthopus*. Perhaps it may be found mixed with long series of *H. trinotata*, but I expect it will prove very rare.

90. *Homalota xanthopus.*

Linearis, nigra, antennarum basi elytris pedibusque testaceis; elytris circa scutellum angulisque apicis

fuscis; thorace transverso, basi plus minusve impresso; abdomine segmentis 2-4 subtiliter haud crebre punctatis, 5° parcius punctato, 6° lævigato. Long. 1½ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et crenulato.

Fem.; abdomine segmento 7° supra et infra margine posteriore obsoletissime emarginato.

H. xanthopus, Th. Öfv. Vet. Ac. Förh. 1856, p. 96; *Atheta xanthopus,* Th. Sk. Col. iii. 77. *H. sublinearis,* Kr. Ins. Deutsch. ii. 275; Wat. Cat.

This species, though narrower and more parallel than its allies, is pretty near to *H. trinotata* and *triangulum.* The antennæ are moderately long and stout, very little thickened towards the apex, the basal joint yellow, and the two or three following ones more or less distinctly so, the rest pitchy; joints two and three of nearly the same length, four small, about as long as broad, five broader than four, five to ten differing but little from one another, transverse but not strongly so, the last joint moderately long and stout, about as long as the two preceding together. The head is a little narrower than the thorax, rounded behind the eyes, finely and indistinctly punctured. The thorax is but slightly narrower than the elytra, a third or fourth broader than long, the sides a little rounded at the anterior angles, then nearly straight and scarcely narrowed behind, finely and not closely punctured, with a very obsolete impression in front of the scutellum, and sometimes with a fine indistinct channel. The elytra are about a third longer than the thorax, yellow, with three tolerably distinct darker triangular patches, one at the scutellum, and one on each side near the outer angle; finely and pretty closely punctured. The abdomen is black and shining, segments two to four rather sparingly punctured, fifth very sparingly punctured, sixth nearly impunctate. Legs yellow.

In the male, the dorsal plate of the seventh abdominal segment has the apex truncate and crenulate; the ventral plate of the same segment has also the posterior margin more rounded than in the female.

Generally distributed in England, and in the south of Scotland, but rare.

Obs.—This species in colour bears a resemblance to *H. æneicollis,* but is smaller and narrower, and has shorter-jointed antennæ.

91. *Homalota triangulum.*

Nigra, sat nitida, elytris testaceis, circa scutellum angulisque apicis determinate nigris, pedibus fusco-testaceis; thorace transverso; abdomine supra segmentis 2-4 parce punctatis, 5 et 6 lævigatis. Long. $1\frac{1}{2}$-$1\frac{2}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et crenulato.

Fem.; segmento 7° supra et infra margine posteriore medio obsoletissime emarginato.

H. triangulum, Kr. Ins. Deutsch. ii. 273; Wat. Cat.

Allied to *H. trinotata,* but more parallel, with the thorax more developed, the end joint of the antennæ longer, and the black triangular patch about the scutellum larger and more distinct. The antennæ are black, moderately long and stout, slightly thickened towards the apex; joints two and three of about equal length, four scarcely broader than three, about as long as broad, from this onwards very slightly thickened, and each joint transverse, but not strongly so; eleventh joint long, more than twice the length of the tenth. Head narrower than the thorax, black, finely and indistinctly punctured. Thorax a little narrower than the elytra, about a third broader than long, the sides gently rounded at the anterior angles, then nearly straight behind, pretty finely and closely punctured, with a very indistinct impression in front of the base in the middle. The elytra are more than a third longer than the thorax, testaceous, with a large, black, well-defined, triangular patch at the scutellum, and with a black patch at each side, rather closely and distinctly punctured. The abdomen is black and shining, segments two to four sparingly punctured, fifth segment very sparingly punctured, sixth nearly impunctate. Legs fusco-testaceous, the thighs darker than the tibiæ.

In the male, the apex of the dorsal plate of the seventh segment of the abdomen is truncate and crenulate, the outer tooth on each side being rather the more distinct; the ventral plate is a little produced, and has the hind margin rounded.

The female has the posterior margins of the same segment, both above and below, very indistinctly emarginate in the middle.

Scarce. Croydon, Darenth, Chatham, Brighton.

It is remarkable that this species has two very distinct habitats, viz., at the sap of trees, and under sea-weed on the coasts; I have never found it except under these conditions, and can find no difference whatever between the specimens from these different localities. Kraatz mentions it only as a coast species.

Obs.—This species is allied to *H. xanthopus*, but is larger and broader, has the base of the antennæ black, and the triangular patches on the elytra much more distinctly marked.

92. *Homalota fungicola.*

Nigra, antice haud nitida, antennarum basi pedibusque testaceis, elytris brunneis; thorace transverso; abdomine segmentis 2-4 subtiliter vix crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. circiter 1½ lin.

Mas; antennis articulo 3° incrassato; abdomine segmento 7° dorsali apice truncato, et crenulato; ventrali producto, apicem versus paulo angustato.

Fem.; abdomine segmento 7° ventrali haud producto, apice lato, leviter rotundato.

H. fungicola, Th. Öfv. Vet. Ac. Förh. 1852, p. 142; Kr. Ins. Deutsch. ii. 274; *Atheta fungicola*, Th. Sk. Col. iii. 76. *H. nigricornis*, Wat. Cat. *H. socialis*, Er. Gen. et Spec. Staph. 102 (*ex parte*).

Rather flat, the fore parts dull, the antennæ stoutish, and the elytra brown; but a very variable and puzzling species. The antennæ are rather stout, two or three basal joints yellowish, gradually thickened from the fourth to the eighth joint, but not after that; joint three distinctly longer than two, slender in the female, stout in the male; four comparatively small, scarcely or not at all broader than three, five considerably broader than four, from this to the seventh or eighth each slightly stouter than its predecessor, five to ten distinctly but not strongly transverse; eleventh joint rather pointed, about as long as the two preceding together. The head is narrower than the thorax, broad and short, dullish, finely and not closely punctured. The thorax is but little narrower than the elytra, fully half as broad again as long,

the sides gently rounded in front, the disc flat, sometimes obscurely depressed, and channelled, rather dull, pretty closely and distinctly punctured. The elytra are brownish, about one-third longer than the thorax, pretty thickly and finely punctured, rendered dullish by a soft pretty close pubescence. The abdomen is black and shining, segments two to four rather finely and not closely punctured, fifth segment sparingly punctured, sixth impunctate. Legs yellow.

In the male, the third joint of the antennæ is much stouter than in the female; the hind margin of the upper plate of the seventh abdominal segment is truncate, and finely crenulate, terminated on each side by a more distinct but small tubercle; the ventral plate of the same segment is distinctly produced, and much narrower at the apex than in the female. In the female, the ventral plate of the seventh segment is broad at the posterior margin, and gently rounded.

Abundant all over the country, especially in fungus in the autumn.

Obs.—There are, I think, still two species confounded under this; the female, in one, has the hind margin of the ventral plate of the seventh segment, distinctly, even deeply, excised; while, in the other, it is rounded as described above; the species with the excision seems to be much rarer than the other, and as I am unable to point out other satisfactory characters to distinguish it, I content myself at present, with calling attention to this anomaly.

93. *Homalota ignobilis.*

Sat convexa, nigra, elytris fuscis, pedibus piceis; thorace transverso; abdomine segmentis 2-4 distincte haud crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. 1½ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et obsolete crenulato; ventrali apicem versus paulo angustato, apice ipso rotundato.

Fem.; abdomine segmento 7° ventrali margine posteriore dense evidenter ciliato, medio sat profunde exciso.

Allied to *H. fungicola;* compared with typical examples of that species, a little larger, not so flat, with the front

parts not so dull, the base of the antennæ dark, the head narrower, and the ventral plate of the seventh abdominal segment differently formed in the female. The antennæ are blackish, not thickened outwards after the sixth or seventh joint, formed much as in *fungicola*, the fourth joint small and transverse. The head is smaller than the thorax, the vertex moderately convex, finely and indistinctly punctured. The thorax is not quite so broad as the elytra, nearly half as broad again as long, pretty closely and distinctly punctured, the disc not flattened, sometimes with a fine indistinct channel. The elytra are of a dark fuscous colour, about one-third longer than the thorax, rather closely and finely punctured. Abdomen with segments two to four pretty distinctly and rather sparingly punctured, fifth segment sparingly punctured, sixth almost impunctate. Thighs pitchy; tibiæ pitchy-testaceous.

In the male, the upper plate of the seventh abdominal segment has the hind margin truncate, and finely crenulate, and is terminated on each side by a more distinct but small tubercle, much as in *H. fungicola*,; the ventral plate of the seventh segment in the female, has the hind margin fringed with closely-set parallel cilia, and is in the middle distinctly, even rather deeply, excised.

Rare. I have taken it on one or two occasions at Shirley near Croydon, in the autumn, and also near Edinburgh. I have seen specimens from Germany.

Obs.—The cilia at the posterior margin of the seventh segment (ventral plate) of the female, so conspicuous in this species, are also to be found in ♀ *H. fungicola*, but are there so short, fine, and light coloured, as only to be perceived with difficulty.

94. *Homalota diversa.*

Nigra, subdepressa, vix nitida, elytris fuscis, pedibus testaceis; antennis articulo 4° quadrato; thorace transverso, basi plus minusve canaliculato; abdomine supra segmentis 2-4 parce punctatis, 5 et 6 fere lævigatis. Long. $1\frac{2}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et subtiliter crenulato.

Allied to *H. succicola*, and perhaps confounded with it; not quite so shining, rather more depressed, with the

elytra darker coloured, and the antennæ differently formed, the fourth joint not being transverse, and only a little narrower than the fifth, the following joints narrower, and the terminal one much shorter than in *succicola*. The antennæ are black, with the basal joint sometimes pitchy; moderately long, scarcely thickened towards the apex; joint three slightly longer than two, but little difference between four and five, each about as long as broad, six to ten each a little broader than long; eleventh joint rather short, pointed, about half as long again as the tenth. Head much narrower than the thorax, disc moderately convex, generally with a small but distinct fovea, finely and indistinctly punctured, not very shining. Thorax a little narrower than the elytra, nearly half as broad again as long, gently rounded and depressed at the anterior angles, the sides nearly straight behind; generally with a distinct longitudinal channel, reaching from the base half way to the front, this is sometimes, however, scarcely to be seen; rather dull, pretty finely and not closely punctured. Elytra about a third longer than the thorax, pitchy-brown, pretty closely and distinctly punctured. Abdomen black and shining, segments two to four rather finely and sparingly punctured, fifth segment very sparingly punctured, sixth almost impunctate. Legs dark yellow.

The male has the hind margin of the seventh dorsal segment of the abdomen truncate, and very finely crenulate, the truncate part terminated on each side by a rather longer and more distinct projection.

I have a good series of this species taken at Rannoch in Perthshire, and have besides found it at Thornhill, and in Glen Almond, Perthshire.

Obs.—Though somewhat allied to *H. succicola*, it is, I think, more correctly placed near *fungicola*, from which its larger size, darker colour, less parallel form, and somewhat differently formed antennæ, distinguish it.

95. *Homalota boletobia.*

Nigra, antennarum basi pedibus elytrisque testaceis, his circa scutellum angulisque apicis infuscatis; thorace fortiter transverso, basi obsolete impresso; abdomine supra segmentis 2-4 minus crebre punctatis, 5° parce punctato. Long. 1⅓ lin.

Mas; abdomine segmento 7° dorsali apice truncato, et obsolete obtuse quadridentato.

H. boletobia, Th. Öfv. Vet. Ac. Förh. 1856, p. 96; *Atheta boletobia*, Th. Sk. Col. iii. 78. *H. nigritula*, Kr. Ins. Deutsch. ii. 276; Wat. Cat.

A rather broad and short species. The antennæ are rather short, a little thickened towards the apex, pitchy, with the two or three basal joints paler; joint three scarcely so long as two, four small, but little broader than three, broader than long, five to ten distinctly and pretty strongly transverse; eleventh joint moderately long, about half as long again as the tenth. The head is broad and short, narrower than the thorax, rather shining, finely and indistinctly punctured. The thorax is black or pitchy, nearly as broad as the elytra, not quite twice as broad as long, nearly straight in front, gently rounded at the sides and base, with an indistinct impression or channel in front of the scutellum, rather finely and not closely punctured. The elytra are a third longer than the thorax, pale yellow, darker about the scutellum, and at the sides towards the apical angles, pretty finely and closely punctured. The abdomen is black, or pitchy-black, sometimes a little paler at the extremity; segments two to four are rather distinctly but not closely punctured, fifth segment punctured at the base, almost smooth at the apex, sixth almost impunctate. Legs pale yellow.

In the male, the posterior margin of the seventh segment of the abdomen is truncate, and a little thickened, with four obtuse obsolete teeth; these teeth are rather undulations of the margin, than to be distinguished as distinct projections.

Not very common. In fungi in the South, in autumn.

Obs.—Kraatz's description of *H. nigritula*, as well as specimens sent by him to the British Museum under that name, are to be referred to this species. Its much shorter broader form, shorter antennæ, and paler elytra, should prevent its being confounded with *H. xanthopus*.

96. *Homalota nigritula.*

Nigro-picea, vix nitida, subtiliter punctulata; thorace transverso, piceo; antennis elytris pedibusque testaceis;

abdomine supra segmentis 2-4 subtiliter sat crebre punctatis, 5 et 6 fere lævigatis. Long. 1¼ lin.

Mas; abdomine segmento 7° dorsali apicem versus utrinque linea longitudinali elevata, margine apicali medio profunde semicirculariter exciso, excisionis margine evidenter incrassato.

Aleochara nigritula, Gyll. Ins. Suec. ii. 408; *Atheta nigritula*, Th. Sk. Col. iii. 80. *H. liturata*, Wat. Cat.

Antennæ rather short and stout, yellow; joints two and three of about equal length, four to ten short, the first of them rather, the last of them very transverse, five a good deal broader than four; eleventh joint comparatively long, quite as long as the two preceding together. The head is narrower than the thorax, black, dull, narrower behind the eyes, which are rather prominent, finely and indistinctly punctured; palpi yellow. Thorax nearly as broad as the elytra, strongly transverse, twice as broad as long, pitchy or pitchy-red, finely and rather closely punctured, sometimes with an indistinct longitudinal channel. Elytra pale yellow, sometimes a little darker about the scutellum, about half as long again as the thorax, finely and densely punctured. Abdomen pitchy-black, segments two to four finely but not very closely punctured, fifth and sixth segments almost impunctate. Legs pale yellow.

The male has, in the middle of the hind margin of the dorsal plate of the seventh abdominal segment, a deep semicircular incision, the margin of which is thickened all the way round; outside this on each side is a thickened raised line terminating in a slight projection at each outer angle.

Taken in abundance in fungi in the Fens, Cambridge, by Mr. Crotch.

Obs.—The smaller size, pale antennæ with shorter joints, &c., distinguish this species from *H. boletobia*, with which it appears to have been confounded by Kraatz. It might almost be naturally placed in the next section.

97. *Homalota coriaria.*

Nigra, nitida, elytris fuscis, antennarum basi pedibusque obscure testaceis; thorace fortiter transverso; abdo-

mine segmentis 2-4 subtiliter haud crebre punctatis, 5 et 6 fere lævigatis. Long. 1⅓ lin.

Mas; thorace disco impresso; abdomine segmento 7° dorsali margine apicali utrinque denticulo prominulo terminato, et medio leviter emarginato.

H. coriaria, Kr. Ins. Deutsch. ii. 282; Wat. Cat.

Not very closely allied to any other species; rather broad and convex. The antennæ are moderately stout, rather short, a little thickened towards the apex, blackish, with the two or three basal joints paler; joints two and three rather short, of about equal length, four small, about as broad as three, not quite so long as broad, five broader than four, from this to the tenth transverse, but not strongly so; eleventh joint moderately stout, about as long as the two preceding together. The head is rather broad, but considerably narrower than the thorax and elytra, black and shining, finely and indistinctly punctured, rounded behind the eyes. Thorax strongly transverse, its breadth twice its length, a little narrower than the elytra, the sides gently rounded, rather narrower at the anterior than at the posterior angles, extremely finely punctured and pubescent; in the female with a small fovea in front of the scutellum, in the male with a more or less distinct large impression on the middle. The elytra are about a third longer than the thorax, of an obscure brownish colour, finely and closely punctured. The abdomen is black and shining, segments two to four rather sparingly punctured, fifth segment very sparingly and finely punctured, sixth almost impunctate. Legs pitchy-yellow.

In the male, the thorax is impressed on the disc; and the seventh segment of the abdomen has a small notch in the middle of the hind margin, and the lateral margin on each side is produced into a small sharp tooth, between which and the central notch can generally be seen one or more indistinct smaller teeth, which, however, are sometimes quite absent.

Not common. In cut grass, &c. Thornhill, and near London.

98. *Homalota sodalis.*

Convexa, nigra, nitidula, elytris nigro-brunneis, antennis piceis, basi pedibusque rufo-testaceis; thorace

transverso, basi indistincte impresso, elytris angustiore; his dense sat fortiter punctatis; abdomine supra segmentis 2-4 haud crebre punctatis, 5 et 6 fere lævigatis. Long. 1½ lin.

Mas; abdomine segmento 7° dorsali apice angulatim emarginato, ventrali apicem versus angustato.

H. sodalis, Er. Käf. Brand. i. 328; Gen. et. Spec. Staph. 104; Kr. Ins. Deutsch. ii. 279; Wat. Cat.; *Atheta sodalis,* Th. Sk. Col. iii. 84.

Antennæ moderately stout, thickened towards the apex, pitchy in colour, paler at the base; joint two slightly longer than three, four to ten each slightly broader than its predecessor, four about as long as broad, five a little transverse, the following ones gradually more distinctly so; eleventh joint nearly as long as the two preceding together. The head is rather small, narrower than the thorax, much narrower than the elytra, black and shining, finely and indistinctly punctured. Thorax narrower than the elytra, a third broader than long, rather narrower at the anterior than at the posterior angles, its punctuation neither fine nor close; in front of the scutellum is a broad obsolete impression, sometimes appearing double. The elytra are about a third longer than the thorax, of a brownish or blackish colour, densely and rather strongly punctured and pubescent. The abdomen is black and shining, segments two to four distinctly but not densely punctured, five and six nearly impunctate. Legs reddish-yellow.

The male has the hind margin of the upper plate of the seventh abdominal segment distinctly excised, the margin of the excision is scarcely visibly thickened; the ventral plate of the same segment is very narrow towards the apex, but the apex itself is not pointed.

Not uncommon in fungi in the summer. Abundant near Edinburgh.

Obs.—This species varies in the colour of its antennæ and elytra. It is not very closely allied to any of our other species, but *H. humeralis,* Kr., found in Germany and Sweden, is very near it.

99. *Homalota gagatina.*

Convexiuscula, antice et postice subangustata, nigra, elytris fuscis, antennarum basi pedibusque testaceis; an-

tennis articulis 7-10 minus evidenter transversis; thorace transverso; abdomine segmentis 2-4 sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. 1¼ lin.

Mas; abdomine segmento 7° dorsali apice 4-dentato, dentibus intermediis obtusis.

H. gagatina, Baudi, Stud. Ent. 119 (1848). *H. compressicollis*, Th. Sk. Col. iii. 85. *H. variabilis*, Kr. Ins. Deutsch. ii. 284; Wat. Cat.

Somewhat resembling the species of the *H. fungi* group, the head being narrow in proportion to the thorax, and the abdomen somewhat narrowed behind. It is rather convex, and but little shining, owing to a tolerably evident pubescence. The antennæ are moderately slender, a little thickened towards the apex, pitchy-black, with the two or three basal joints more or less distinctly yellow; joints two and three of nearly equal length, only moderately long, from the fourth onwards each joint is slightly stouter, four to six each about as long as broad, seven to ten slightly transverse; eleventh joint about as long as the two preceding together. The head is moderately broad, much narrower than the thorax, scarcely shining, finely and indistinctly punctured. The thorax is a little narrower than the elytra, about half as broad again as long, the sides gently rounded, narrower at the anterior than at the posterior angles, finely and pretty closely punctured, and with a very indistinct impression in front of the scutellum. The elytra are nearly a third longer than the thorax; of a brownish or pitchy-brown colour, finely and closely punctured. The abdomen is black, shining towards the extremity, which is sometimes paler; segments two to four distinctly and moderately closely punctured, fifth segment finely and sparingly punctured, sixth nearly impunctate. Legs yellow, sometimes infuscate.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is furnished with four teeth, the two central ones are only separated by a shallow notch, and are broad and blunt, the outer ones do not reach quite so far back as the middle ones, and are narrower and sharper.

Generally distributed and not rare. In fungi or dead leaves. London, Inverness-shire, &c.

Obs.—This species is a troublesome one to recognize; the male characters distinguish that sex readily enough,

but the female might be confounded with *H. subsinuata* or *fungicola*, though distinct enough from either. It varies a good deal in colour, and northern specimens appear to be larger and darker than those found near London.

100. *Homalota divisa.*

Subdepressa, antice subopaca, nigra, antennarum basi elytrisque fuscis, pedibus testaceis; antennis articulo ultimo elongato; thorace transverso, basi canaliculato; abdomine supra segmentis 2-4 subtiliter sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. 1¼ lin.

Mas; capite prothoraceque late et profunde canaliculatis; segmento abdomine 7° dorsali margine posteriore incrassato, vix emarginato, angulo externo prominulo.

H. divisa, Maerk. Germ. Zeit. v. 213; Kr. Ins. Deutsch. ii. 279; Wat. Cat. *Atheta aridula*, Th. Sk. Col. iii. 75.

A rather broad, flat species. Antennæ rather slender, scarcely thickened towards the apex; joints two and three rather short, three not quite so long as two, four rather small, about as long as broad, the following joints slightly transverse; eleventh joint long in proportion to the rest of the antennæ, about three times as long as the tenth. The head is narrower than the thorax, subquadrate, with the angles rounded, finely and indistinctly punctured; in the male with a deep longitudinal impression or channel, in the female generally with a short channel, but sometimes without any trace of this. The thorax is a little narrower than the elytra, about half as broad again as long, the sides a little rounded at the anterior angles, then a little narrowed behind, finely and closely punctured; in the female with a short channel in front of the scutellum, in the male with the disc longitudinally depressed and channelled. The elytra are about a third longer than the thorax, of a brownish colour, finely and pretty densely punctured. The abdomen has the basal segments, two to four, finely and moderately closely punctured, fifth segment more sparingly punctured, sixth nearly impunctate. Legs yellow.

In the male, the head and thorax are deeply impressed, the abdomen has the dorsal plate of the seventh segment

with a thickened posterior margin, and the sides also towards the apex elevated, the outer angles project a little, so as to give the hind margin a slightly concave appearance.

In moss in wet places, generally distributed in England and Scotland, but nowhere common.

Obs.—The comparatively elongate terminal joint of the antennæ in this species, is its most notable character.

101. *Homalota nigricornis.*

Subdepressa, crebre subtiliter punctata, subopaca, nigra, antennis elytrisque nigro-fuscis, pedibus fusco-testaceis; thorace transverso; abdomine supra segmentis 2-4 subtiliter sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. 1¼ lin.

Mas; capite prothoraceque disco impressis; abdomine segmento 7° dorsali apice late indistincte emarginato.

H. nigricornis, Th. Öfv. Vet. Ac. Förh. 1852, p. 142; Kr. Ins. Deutsch. ii. 281; *Atheta nigricornis,* Th. Sk. Col. iii. 86.

Allied to *H. divisa,* but readily distinguished by its darker elytra, and the shorter terminal joint of the antennæ. The antennæ are moderately long, slightly thickened towards the apex, pitchy-black, the basal joint pitchy; joints two and three moderately long, of about equal length, four rather small, about as broad as three, and about as long as broad, five rather stouter than four, slightly transverse, six to ten transverse, the first of them indistinctly, the last of them distinctly so; eleventh joint nearly twice as long as the tenth. The head is black, narrower than the thorax, finely and indistinctly punctured; in the male the disc is more or less depressed. The thorax is a little narrower than the elytra, about half as broad again as long, the sides a little rounded in front, then scarcely narrowed behind, finely and closely punctured; in the male the disc has a broad impression, and in the female there is sometimes a short channel in front of the scutellum. The elytra are fully a third longer than the thorax, black or pitchy-black, finely and closely punctured. The abdomen is black, segments two to four finely and moderately densely punctured, fifth segment very sparingly and finely punctured, sixth nearly impunctate. Legs pitchy-yellow, the femora being darker than the tibiæ.

In the male, besides the impressions on the head and thorax, the posterior margin of the dorsal plate of the seventh abdominal segment, is slightly excavated.

Found both in England and Scotland, but not abundant; at the sap of trees, and in vegetable refuse.

Obs.—I have not thought it necessary to adopt the name of *H. Thomsoni* which has been proposed for this species, as Stephens' description of *Aleochara nigricornis* may be considered for all practical purposes as not existing, and cannot therefore require the suppression of Thomson's *H. nigricornis*.

102. *Homalota angusticollis.*

Nigra, elytris nigro-fuscis, pedibus fuscis; thorace subquadrato, basi canaliculato; elytris hoc sesqui longioribus; abdomine supra segmentis 2-4 parce subtiliter punctatis, 5 et 6 fere lævigatis. Long. $1\frac{1}{3}$ lin.

Mas; antennis articulis haud vel vix transversis; abdomine segmento 7° dorsali apice obsoletissime emarginato.

Fem.; antennis articulis 7-10 leviter transversis; abdomine segmento 7° dorsali apice rotundato.

H. angusticollis, Th. Öfv. Vet. Ac. Förh. 1856, p. 100; *Atheta angusticollis*, Th. Sk. Col. iii. 87.

A dark-coloured, rather narrow and elongate species, with the thorax distinctly narrower than the elytra, and scarcely transverse; head, thorax and elytra rather dull. The antennæ are black, rather long, scarcely thickened towards the apex; joints two and three of about equal length, four rather small, about as wide as three, and about as long as broad, joints five and six each about as long as broad, seven to ten, in the male nearly or quite as long as broad, in the female transverse, but not strongly so; last joint nearly twice as long as the tenth. The head is scarcely narrower than the thorax, rather long, the sides straight behind the eyes, then rounded at the posterior angles, finely and indistinctly punctured, but scarcely shining; convex above in the female, flattened and sometimes indistinctly impressed in the male. The thorax is considerably narrower than the elytra, a fourth broader than long, slightly narrowed behind, finely and not densely punctured, and not shining, with a short long-

itudinal channel in front of the scutellum. The elytra are about half as long again as the thorax, obscurely brownish or brownish-black or nearly black, finely and pretty closely punctured, but little shining. The abdomen is black and shining, segments two to four finely and sparingly punctured, fifth segment very sparingly punctured, sixth nearly impunctate. The legs are pitchy-testaceous, the thighs generally darker than the tibiæ.

In the male, the penultimate joints of the antennæ are longer than in the female, the upper surface of the head is flatter, the hind margin of the dorsal plate of the seventh abdominal segment is obsoletely emarginate, and the ventral plate of the same segment is narrower and rather longer than in the female, and its hind margin is more rounded.

Not uncommon in fungi, vegetable refuse, &c., in Scotland; Thornhill, Edinburgh, Rannoch, Inverness-shire. In England, I have only found it near Croydon.

Obs.—My specimens agree entirely with a specimen of *H. angusticollis*, sent by Thomson to Mr. Crotch. The species has been generally supposed to be synonymous with *H. ravilla*, Er., Kr., but Thomson, in the 9th vol. of Sk. Col., recognizes *H. ravilla* and *angusticollis* as distinct species, both occurring in Sweden; and states that the much longer terminal joint of the antennæ of *H. ravilla* distinguishes it from *angusticollis*. An example of *H. ravilla*, sent by Kraatz to the British Museum, when compared with my specimens of *angusticollis*, shows this distinction in a very marked manner; and among a long series of *H. angusticollis*, taken by me in different parts of Scotland, I find no variation in the length of the last joint of the antennæ.

103. *Homalota palustris.*

Nigra, sat nitida, elytris obscure brunneis, pedibus testaceis; thorace transversim subquadrato; abdomine segmentis 2-4 subtiliter sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. 1-1¼ lin.

Mas; abdomine segmento 7° dorsali apice emarginato, ventrali producto, apicem versus vix angustato.

H. palustris, Kies. Stet. Ent. Zeit. v. 318; Kr. Ins. Deutsch. ii. 309; Wat. Cat. *Atheta brunnipes*, Th. Sk. Col. iii. 72.

Antennæ moderately slender, scarcely thickened towards the apex, pitchy or pitchy-black, the base sometimes indistinctly paler; joint three not quite so long as two, four rather smaller than five, each of them about as long as broad, six to ten each a little broader than long; eleventh joint about twice as long as the preceding one. The head is slightly narrower than the thorax, black and shining, very finely and indistinctly punctured. The thorax is a little narrower than the elytra, about a third broader than long, the sides a little rounded at the anterior angles, then nearly straight behind; it is black and shining, very finely and not closely punctured, its pubescence is extremely fine. The elytra are about a third longer than the thorax, brownish, often nearly black, finely and closely punctured. The abdomen is black and shining, segments two to four are finely and moderately closely punctured, fifth very finely and sparingly punctured, sixth almost impunctate. Legs rather dirty yellow.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is distinctly emarginate; the ventral plate of the same segment is considerably produced, but little narrowed towards the hind margin, which is nearly straight, with the angles rounded.

Moderately common all over the country.

Obs.—This species is readily distinguished from *H. angusticollis* by its more shining head and thorax, the latter of which is broader, and by its shorter elytra. Its most marked character is the formation of the upper and under plates of the seventh segment in the male.

104. *Homalota corvina.*

Linearis, nigra, elytris nigro-piceis, pedibus fuscis; antennis articulo penultimo præcedente longiore; thorace transversim subquadrato, basin versus subangustato, elytris angustiore; his thorace sesqui longioribus; abdomine basi parce punctato, apice lævigato. Long. vix 1 lin.

Mas; capite profunde canaliculato, thorace medio late foveolato, abdomine segmento 7° dorsali apice obsolete truncato.

H. corvina, Th. Öfv. Vet. Ac. Förh. 1856, p. 101; *Atheta corvina,* Th. Sk. Col. iii. 88. *H. lepida,* Kr. Ins. Deutsch. ii. 309.

A small dark-coloured species, with large head, and the thorax narrower than the elytra. Antennæ black, the basal joint pitchy, a little thickened towards the apex; first joint stout in proportion to the others, three not so long as two, four smaller than any of the others, five to nine distinctly transverse, ten notably longer and less transverse than nine; eleventh joint rather short and stout, about half as long again as the tenth. The head is scarcely narrower than the thorax, rather long, with the eyes prominent; in the male with a deep longitudinal channel, extending the whole length, in the female with a short impression in the middle behind the antennæ. The thorax is considerably narrower than the elytra, scarcely a third broader than long, a little narrowed behind, finely but somewhat roughly and pretty closely punctured; in the male with a large fovea in the middle, in the female with an indistinct impression or channel in front of the scutellum. The elytra are black or pitchy-black, long in proportion to their breadth, half as long again as the thorax, finely and pretty closely punctured. Abdomen black and shining, segments two to four sparingly punctured, five and six nearly impunctate. Legs pitchy or pitchy-testaceous.

In the male, the third joint of the antennæ is stouter than in the female, the head and thorax are more distinctly impressed, the seventh abdominal segment is narrower than in the female, and the apex of its dorsal plate a little truncate.

In fungi and vegetable refuse, not common. Brockenhurst, Edinburgh, Thornhill.

Obs.—I think, from descriptions, that *H. corvina*, Th., is pretty certainly identical with *H. lepida*, Kr. Kraatz truly says, that fresh specimens of this species appear more strongly punctured than old ones.

105. *Homalota puberula.*

Subdepressa, parallela, nigro-picea, nitidula, elytris fuscis, pedibus fusco-testaceis; capite thorace elytrisque parce subtilissime punctatis, et tenuissime pubescentibus; thorace transverso, elytris hoc sesqui longioribus; abdomine basi parce punctato, apice fere lævigato. Long. 1 lin.

Mas; thorace medio profunde impresso; abdomine segmento 7° dorsali apice truncato et crenulato, ventrali producto, apice late rotundato.

Allied to *H. corvina*, and about the size of that species, but more parallel, with broader thorax, and the anterior parts of the body much more finely and sparingly punctured. Antennæ black, a little thickened towards the apex; joint three shorter than two, four to ten each slightly broader than its predecessor, and each a little broader than long, and a little narrowed towards the base; eleventh joint moderately stout and pointed, not twice the length of the tenth. Head distinctly narrower than the thorax, rather broad, eyes moderately prominent, the disc flat and shining, and slightly channelled in the male. The thorax is black and shining, very nearly as broad as the elytra, more than half as broad again as long, scarcely narrowed behind, very finely and sparingly punctured, the disc in the male with a large deep impression. The elytra are pitchy, fully half as long again as the thorax, finely and sparingly punctured, and with very fine pubescence. The abdomen is black and shining, its pubescence rather more distinct than that of the fore parts of the body, the basal segments are sparingly punctured, the apical ones nearly impunctate. The legs are dirty yellow.

In the male, the seventh abdominal segment has the dorsal plate with the apex broad and truncate, and crenulate, the ventral plate is distinctly produced, its hind margin broad and rounded.

Very rare; taken by Dr. Power, and by myself at Mickleham, in the month of September.

106. *Homalota atomaria.*

Nigra, nitidula, elytris vel nigris vel fuscis, pedibus piceo-testaceis, omnium parce subtilissime punctata tenuissimeque pubescens; thorace transverso, basi indistincte foveolato; abdomine supra vage punctato, fere lævigato. Long. $\frac{2}{3}$ lin.

H. atomaria, Kr. Ins. Deutsch. ii. 254; *H. minuscula*, Bris. Ann. Soc. Ent. Fr. 1859, p. ccxviii.

A very small, black and shining species, with scarcely visible punctuation or pubescence. The antennæ are

black, the base sometimes indistinctly pitchy, a little thickened towards the apex; joint three shorter and more slender than two, narrowed towards the base, four to ten transverse; eleventh joint nearly twice as long as the tenth. The head is a little narrower than the thorax, black, shining, and impunctate. The thorax is but little narrower than the elytra, about a third broader than long, shining, extremely finely and sparingly punctured, with a small, very indistinct impression in front of the scutellum. The elytra are black, or pitchy, a third longer than the thorax, extremely sparingly and finely punctured, and with a very sparing and delicate pubescence. The abdomen is black and shining, very sparingly punctured. The legs are pitchy.

The male is scarcely to be distinguished from the female, except by the considerably narrower abdominal segment.

Rare. I have found it in heaps of cut grass at Thornhill, and have seen it also in Mr. Waterhouse's and other collections.

Obs.—I have identified this species by comparison with the types of *H. minuscula*, Bris. Kraatz has himself declared the identity of M. Brisout's *minuscula* with his *atomaria*.

107. *Homalota perexigua.*

Nigra, nitidula, elytris nigro-fuscis, pedibus piceo-testaceis, omnium parce subtilissime punctata tenuissimeque pubescens; thorace transversim subquadrato, elytris angustiore; abdomine supra fere lævigato. Long. ½ lin.

Closely allied to *H. atomaria*, but still smaller and more fragile, the thorax less transverse and narrower than the elytra, the antennæ notably thinner, though similarly formed, so that the intermediate joints are less transverse.

In the male, the seventh abdominal segment is narrower than in the female, its ventral plate is narrow, a little produced, and with the hind margin rounded.

Very rare. I have found it on one or two occasions near London, and have seen specimens in several collections.

Section F.

Group XVI. *Large, or not very small species; the penultimate joints of the antennæ very strongly transverse.* (Species 108—115).

The species herein contained constitute a tolerably natural assemblage, though there is a great diversity of colour and size. The male characters of all the species are well marked and unmistakeable. *H. cinnamomea*, and *hospita* occur only among the burrows of *Cossus ligniperda;* they might naturally be separated from the others as a distinct group, except that no practical advantage would result from this. *H. oblita* occurs gregariously in fungi in the autumn. The other species are all rare, and little is known of their habits.

108. *Homalota cinnamomea.*

Lata, brunneo-testacea, antice vix nitida, subtiliter punctata; abdomine nigricante, vix punctato; thorace fortiter transverso. Long. 2-2¼ lin.

Mas; a. elytrorum sutura basi evidenter carinata elevata; abdomine segmento 7° dorsali medio ante apicem longitudinaliter elevato, apice triangulariter producto, medioque obsolete inciso, utrinque spino minore acuto subcurvato.

β. elytrorum sutura basi vix elevata; abdomine segmento 7° medio obsolete longitudinaliter elevato; cætera ut in *a.*

Aleochara cinnamomea, Grav. Micr. 88; *H. cinnamomea*, Er. Gen. et Spec. Staph. 127; Kr. Ins. Deutsch. ii. 289; Wat. Cat.; *Thamiarœa cinnamomea*, Th. Sk. Col. iii. 60.

One of the largest and finest species of the genus, and perhaps resembling in appearance rather a *Myrmedonia* or an *Aleochara*. It is broad, and robustly formed, a little narrowed both before and behind, of a cinnamon-brown colour, with the abdomen black, or pitchy-black. The antennæ are pitchy in colour, testaceous at the base, stout and rather short, increasing in thickness from the third to the seventh or eighth joint; joint three considerably longer than two, four comparatively small, nearly as long as broad, five considerably broader than four, five to ten strongly transverse; eleventh joint large, pointed,

as long as the two preceding together. Head broad and short, but much narrower than the thorax, rounded and narrowed behind the eyes, which are large and prominent; finely and not closely punctured. The thorax is somewhat narrower than the elytra, its breadth twice its length, gently rounded at the sides, a little narrower at the anterior than at the posterior angles, finely and moderately closely punctured, sometimes with an obsolete channel in front of the scutellum. The elytra are about a third longer than the thorax, a little darkened in colour towards the apical angles, finely and pretty closely punctured. The abdomen is black and shining, the basal segment finely and sparingly punctured, the others impunctate; the hind margins of the segments often brownish. The legs are yellow, or reddish-yellow.

The male characters are very peculiar, and not easy to describe; the suture of the elytra is elevated at the base into a distinct carina, terminating abruptly at the scutellum; the seventh segment of the abdomen, is raised in the middle to a sort of carina, the lateral margin projects on each side, as a short pointed, rather curved spine, between these two spines the middle part of the hind margin is much produced, and the apex in the middle has a small notch. A form of the male occurs, however, in which the elevation of the suture, and the carina-like elevation of the seventh segment, are scarcely to be seen.

Pretty common; lives in the burrows of the goat moth, especially in oak and elm trees in England.

Obs.—The abdomen of this species is undoubtedly somewhat narrowed towards the apex.

109. *Homalota hospita.*

Brunnea, haud nitida, abdomine piceo-nigro; thorace fortiter transverso, subtiliter canaliculato; abdomine supra segmentis 2-4 crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. $1\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice medio acuminato, obsolete bituberculato, margine laterali obsolete producto.

H. hospita, Maerk. Germ. Zeit. v. 216; Kr. Ins. Deutsch. ii. 290; Wat. Cat.; *Thamiaræa hospita,* Th. Sk. Col. iii. 60.

This species resembles *H. cinnamomea* in colour, but is easily distinguished by its smaller size and punctured abdomen. The antennæ are stout, a little longer than the head and thorax, yellowish, a little thickened towards the apex; joint three longer than two, four about as stout as three, about as long as broad, five to ten each a little broader than its predecessor, five slightly, ten distinctly, transverse; eleventh joint stout, as long as the two preceding together. Head broad, but considerably narrower than the thorax, with the eyes rather large and prominent, moderately finely and pretty closely punctured. The thorax is nearly of the breadth of the elytra, its breadth about twice its length, the sides gently rounded, finely and closely punctured, with an indistinct longitudinal channel in the middle. The elytra are a little longer than the thorax, pretty finely and closely punctured. The abdomen is blackish, with the base and apex, and the margins of the segments more or less reddish; segments two to four are evenly and pretty closely and finely punctured, fifth segment more sparingly punctured, sixth nearly impunctate. Legs yellowish.

In the male, the seventh abdominal segment has, on the upper side before the apex, an ill-defined indistinct elevation, the apex is produced in the middle, in the form of two teeth close to one another, and not very distinct, the hind margin is also again somewhat produced on each side.

This species is found in company with *H. cinnamomea*, at *Cossus*-infested trees. In Germany, however, it appears to have been found among *Formica fuliginosa*; perhaps, as is often the case, the tree may have been attacked by the *Cossus*, as well as tenanted by ants.

110. *Homalota scapularis.*

Convexiuscula, rufo-testacea, capite abdomineque ante apicem nigricantibus; thorace transverso, apicem versus angustato; abdomine segmentis 2-4 sat crebre minus subtiliter punctatis, 5° parce punctato, 6° fere lævigato. Long. $1\frac{1}{3}$-$1\frac{1}{2}$ lin.

Mas; abdomine segmento 7° dorsali apice 4-dentato, dentibus intermediis obtusis.

Aleochara scapularis, Sahl. Ins. Fenn. i. 372; *H. scapularis*, Kr. Ins. Deutsch. ii. 292; Wat. Cat.; *Alaobia scapularis*, Th. Sk. Col. iii. 100. *H. ochracea*, Er. Gen. et Spec. Staph. 104.

A reddish-yellow species, the head and fourth and fifth abdominal segments blackish; with comparatively small head, and with the punctuation and pubescence of the surface distinct and well marked. The antennæ are reddish-yellow at the base, infuscate towards the apex, they are moderately stout, joint three a little longer than two, four not broader than three, nearly as long as broad, five distinctly broader than four, five to ten transverse, but not strongly so; eleventh joint about as long as the two preceding. The head is roundish, much narrower than the thorax, rather finely and moderately closely punctured, with the eyes rather prominent. The thorax is convex, narrower than the elytra, its breadth nearly twice its length, narrower at the anterior than at the posterior angles, the anterior angles rounded and depressed, closely and moderately finely punctured, and with a distinct pubescence. The elytra are about a third longer than the thorax, closely and rather strongly punctured, with a distinct pubescence. The abdomen is yellowish-red, with the fourth and fifth segments darker; segments two to four are rather strongly and pretty closely punctured, fifth segment more sparingly but distinctly punctured, sixth nearly impunctate; pubescence rather coarse. Legs yellow.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is armed with four teeth, the middle ones are stout, short and rounded, the outer ones project rather more backwards, are slender and pointed.

Scarce; but occurs sparingly in several localities about London, and has been found, not uncommonly, at Monk's Wood, by Mr. Crotch; Weybridge, Mickleham, Croydon.

111. *Homalota subterranea.*

Linearis, sat nitida, rufo-testacea, capite abdomineque plus minusve nigricantibus, subtiliter punctata, antennis validis, basi pedibusque testaceis; abdomine supra segmentis 2-5 parce punctatis, 6° fere lævigato. Long. 1⅓ lin.

Mas; abdomine segmento 7° dorsali apice 4-dentato, dentibus validis.

H. subterranea, Muls. Opusc. ii. 40; Kr. Ins. Deutsch. ii. 291; Wat. Cat.

A parallel, prettily coloured, rather convex species, with very stout antennæ; the anterior parts with fine punctuation and pubescence. The antennæ are short and very stout, pitchy, paler at the base, gradually thickened from the fourth to the tenth joint; joint three short and stout, triangular, slightly shorter than two, four to ten each a little broader than its predecessor, five to ten strongly transverse, and each narrowed towards the base; eleventh joint pointed, about twice as long as the tenth. The head is rather large, nearly as broad as the thorax, blackish, finely and indistinctly punctured; the eyes not prominent. The thorax is more than half as broad again as long, but little narrower than the elytra, reddish-brown, finely and moderately closely punctured. The elytra are about a third longer than the thorax, yellowish-red, finely and moderately closely punctured. The abdomen is shining, pitchy-black, the apex yellowish-red, the base reddish or pitchy-red; segments two to five finely and sparingly punctured, sixth segment nearly impunctate. Legs yellow.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is furnished with four stout teeth of nearly equal length, the two middle ones are stout rounded projecting tubercles, the outer ones, also rather stout, are more pointed.

I have seen only two British specimens of this species, one taken by Mr. Crotch, at Beauly in Inverness-shire, the other by Mr. Hislop at Forres; it is to be found amongst moss and dead leaves.

112. *Homalota dilaticornis.*

Obscure rufa, capite abdomineque nigricantibus, antennis elytrorumque angulo apicali fuscis, antennarum basi pedibusque testaceis; antennis validis; thorace transverso; abdomine segmentis 2-4 parce punctatis, 5° et 6° fere lævigatis. Long. $1\frac{1}{4}$ lin.

Mas; abdomine segmento 7° dorsali margine apicali producto, medio indistincte emarginato, ante apicem tuberculis duobus elevatis, margine laterali utrinque in spina tenui producto.

H. dilaticornis, Kr. Ins. Deutsch. ii. 293.

Rather smaller and less robustly formed than *H. subterranea*, and with a much smaller head; of a reddish colour,

finely punctured and delicately pubescent, with the head, abdomen, and sides of the elytra towards the hinder angles, darker. The antennæ are short and stout, considerably thickened from the fourth to the seventh joint; joints two and three very nearly of equal length, four small but transverse, five considerably broader than four, it and the following strongly transverse; eleventh joint pointed, as long as the two preceding. The head is pitchy, considerably narrower than the thorax, narrowed behind the eyes, finely and indistinctly punctured. The thorax is rather narrower than the elytra, its breadth about twice its length, narrower at the anterior angles than at the base, very finely and moderately closely punctured. The elytra are about a third longer than the thorax, reddish, infuscate towards the apical angles, finely and pretty closely punctured. The abdomen is shining, pitchy-black, obscurely paler at the base and apex; segments two to four finely and sparingly punctured, five and six nearly smooth. Legs yellow.

The male characters are very peculiar, but not easy to describe. The seventh abdominal segment has the dorsal plate in the middle a little produced behind, and the middle of its hind margin presents a shallow notch, the margin of which is a little thickened; a little before the hind margin, and close to the outside, is to be seen on each side a distinct raised tubercle; moreover the lateral margin of this segment, is, on each side, produced behind, into a very slender and very indistinct spine, not reaching so far back as the produced middle part of the segment.

Very rare. I have seen only a few specimens, all of which have been taken by Dr. Power, in the neighbourhood of London.

113. *Homalota testaceipes.*

Subdepressa, nitida, subtiliter punctata et tenuiter pubescens, nigra, antennarum basi elytris pedibusque testaceis; antennis validis; thorace transverso, æquali; abdomine supra segmentis 2-4 subtiliter parce punctatis, 5° et 6° fere lævigatis. Long. 1¼ lin.

Mas; abdomine segmento 7° dorsali margine posteriore 4-dentato, dentibus elongatis, acutis.

H. testaceipes, Heer, Faun. Col. Helv. 327. *H. brevicollis,* Baudi, Kr. Ins. Deutsch. ii. 1060. *H. varicornis,* Kr. *l.*

c. 292. *H. Saundersi,* Rye, Ent. Month. Mag. iii. 121 (1866).

Comparatively broader and flatter than *H. subterranea* and *dilaticornis,* and darker in colour. The antennæ are short and very stout, blackish, obscurely paler at the base; joint three nearly as long as two, four small but transverse, about as broad as three, five much broader than four, from this to the tenth each joint is very broad and transverse; the eleventh joint is pointed, about the length of the two preceding. The head is a little narrower than the thorax, but broad, black and shining, very finely punctured. The thorax is but little narrower than the elytra, its breadth about twice its length, the sides evenly rounded, scarcely narrower at the anterior than at the posterior angles, closely and very finely punctured. The elytra are testaceous or fusco-testaceous, the lateral margins a little darker, fully one-third longer than the thorax, finely and pretty closely punctured, with a delicate but distinct pubescence. The abdomen is black and shining; segments two to four sparingly and finely punctured, fifth segment very sparingly punctured, sixth nearly impunctate. Legs yellow.

The male characters are peculiar. The hind margin of the dorsal plate of the seventh abdominal segment is furnished with four very distinct teeth; of these, the two middle ones are near one another, and appear as two produced elongate tubercles, the apex of each of which is a little flattened and somewhat curved inwards, the outer teeth are long, slender, pointed, and a little curved inwards, and project backwards further than the central ones.

This species has as yet been found, in this country, only in the neighbourhood of London. There is a fine series of it in Dr. Power's collection, varying somewhat in size, and a little in the colour of the elytra.

Obs.—There are in the British Museum specimens of *H. brevicollis,* sent by Kraatz; they agree with the examples described above.

114. *Homalota oblita.*

Nigra, haud nitida, elytris fuscis, pedibus fusco-testaceis; thorace transverso, medio canaliculato; abdomine

supra segmentis 2-4 sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. 1 lin.

Mas; abdomine segmento 7° dorsali apice 4-dentato, dentibus intermediis obtusis, rotundatis, lateralibus tenuibus, introrsum curvatis.

H. oblita, Er. Gen. et Spec. Staph. 113; Kr. Ins. Deutsch. ii. 294; Wat. Cat.

A rather small, obscure species, with short stout antennæ. The antennæ are blackish, sometimes obscurely paler at the base, thickened from the third to the sixth joint, but scarcely after that; joints two and three of about equal length, four considerably broader than three, but narrower than five, distinctly transverse, five to ten strongly transverse; eleventh joint about as long as the two preceding. The head is broad, narrower than the thorax, black and dull, pretty closely but very finely and indistinctly punctured. The thorax is but little narrower than the elytra, its breadth fully half as great again as its length, the sides gently rounded in front, scarcely narrower at the anterior than at the posterior angles, very finely and closely punctured, and delicately pubescent, with a moderately distinct longitudinal channel in the middle. The elytra are fully one-third longer than the thorax, sometimes obscurely brown in colour, sometimes nearly black, finely and closely punctured. The abdomen is black, segments two to four distinctly and moderately closely punctured, fifth segment sparingly and finely punctured, sixth nearly impunctate. The pubescence of the abdomen is more distinct than that of the anterior parts. The legs are testaceous, more or less dusky.

In the male, the dorsal plate of the seventh abdominal segment has, in the middle, two stout rounded tubercles projecting backwards, these tubercles are united at their base, but separated at the apex by a slight notch; besides this, on each side is to be seen a rather longer, slender, pointed spine, curved inwards.

Local; but often to be found abundantly in August and September, in fungi. Cambridge, New Forest, Malvern, Shirley, &c.

Obs.—Specimens of this species occur, with rather brighter-coloured elytra and legs than in the type, and in such cases are often more shining and smaller.

115. *Homalota autumnalis.*

Fusco-nigra, sat nitida, parce tenuiter pubescens, antennarum basi pedibusque testaceis; thorace transverso, medio canaliculato; abdomine supra segmentis 2-4 parce distinctius punctatis, 5° et 6° fere lævigatis. Long. 1 lin.

Mas; capite subtiliter canaliculato; abdomine segmento 7° dorsali apice 4-dentato, dentibus intermediis obtusis, approximatis, fere conjunctis, externis acuminatis.

H. autumnalis, Er. Gen. et Spec. Staph. 113; Kr. Ins. Deutsch. ii. 283.

A small, rather broad species, sparingly punctured and pubescent, and yet but little shining, from the fact that the surface between the punctures is very finely coriaceous. The antennæ are short and moderately stout, considerably thickened from the third joint to the apex, pitchy in colour, with the three basal joints yellowish; joint three more slender than two, but nearly as long, four small, about the width of three, nearly as long as broad, five to ten transverse, the first of them slightly, the last of them rather strongly so; eleventh joint stout, as long as the two preceding. Head rather narrower than the thorax, broad, very indistinctly punctured, the parts of the mouth testaceous. The thorax is a little narrower than the elytra, transverse, its breadth about twice its length, the sides rounded at the anterior angles, finely and sparingly punctured and pubescent, with an indistinct longitudinal channel in the middle. The elytra are about a third longer than the thorax, rather more distinctly and closely punctured than it. The abdomen has segments two to four sparingly and moderately finely punctured, five and six nearly impunctate. The legs are yellow, the posterior tarsi stout, and moderately long, the basal joint very short, the terminal one about as long as the four preceding.

In the male, the front of the head is indistinctly channelled, the hind margin of the dorsal plate of the seventh abdominal segment is furnished with four teeth, of about the same length; the middle ones are broad and rounded, and near one another, so as to appear as if forming a central, rather produced, lamina, with a notch at its apex; the lateral teeth are fine and pointed.

Very rare. I have found it only at Horning, in Norfolk, and in a piece of wet ground near Norwood.

Obs.—I have only one example of the male of this species at my command; its male characters do not seem to agree altogether with Kraatz's description, or Mulsant's figure. The place of the species is near *H. oblita*, (as in Erichson), and not next *coriaria*, where it is placed by Kraatz. It is readily distinguished from *oblita* by its more sparing punctuation and pubescence, and the brighter-coloured legs and base of the antennæ.

Group XVII. *Small or very small species; the penultimate joints only of the antennæ strongly transverse.* (Species 116—122).

A group of small black or obscurely coloured species, found in dung, vegetable refuse, and carcases. *H. inquinula* is the smallest species of the genus. The male characters are but unimportant.

116. *Homalota sericea.*

Nigra, antennis elytrisque fuscis, pedibus fusco-testaceis, tenuiter distincte pubescens; thorace transverso; abdomine supra segmentis 2-4 parce subtiliter punctatis, 5° et 6° fere lævigatis. Long. ¾-1 lin.

Mas; abdomine segmento 7° dorsali apice truncato, vix emarginato.

H. sericea, Muls. Opusc. i. 41; Kr. Ins. Deutsch. ii. 295; *Atheta sericea*, Th. Sk. Col. iii. 89; *H. amicula*, Wat. Cat.

A rather robust little species, delicately but distinctly pubescent, moderately shining, with short stout antennæ. These are pitchy-black, with the two first joints pitchy, thickened from the third to the apex; joint two stout, three rather shorter and more slender than two, four to ten each a little stouter than its predecessor, four slightly transverse, ten strongly so; eleventh joint stout, about as long as the two preceding. Head moderately large, rather narrower than the thorax, the sides a little straight behind the eyes, before being rounded at the posterior angles, extremely finely punctured; in the male with an indistinct fovea on the disc. The thorax is but

little narrower than the elytra, its breadth fully half as great again as its length, about as wide at the anterior as at the posterior angles, finely and indistinctly punctured, sometimes with an indistinct impression in front of the scutellum, sometimes with an obscure channel, and often without either. The elytra are blackish, or pitchy-black, rather short, about one-third longer than the thorax, finely and closely punctured, with a fine and moderately close pubescence. The abdomen is black and shining, often a little broader towards the apex, its pubescence pretty distinct, segments two to four finely and rather sparingly punctured, five and six nearly impunctate. Legs dirty testaceous.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is truncate, and obscurely emarginate; the under plate of the same segment is also more produced than in the female, its apex less flattened, and more round.

Abundant all over the country in vegetable refuse, hayricks, outhouses, &c.

Obs.—I see no sufficient reason for considering this species as Stephens's *Aleochara amicula;* his description may, or may not, apply to *H. sericea.* His descriptions (Ill. v. 131) of species 66-72 would each apply about equally well to *H. sericea,* and each is about equally vague and uncharacteristic.

117. *Homalota subtilis.*

Nigra, haud nitida, confertim subtiliter punctata, evidenter pubescens, elytris fuscis, pedibus fusco-testaceis; thorace transverso, æquali; abdomine supra segmentis 2-4 sat parce punctatis, 5° et 6° fere lævigatis. Long. ¾ lin.

H. subtilis, Scriba, Berl. Ent. Zeit. 1866, p. 128.

Allied to *H. sericea,* but distinguished by its denser punctuation and pubescence, its longer elytra, and the thinner joints (especially two to six) of the antennæ. The antennæ are moderately stout, a little thickened towards the apex, black; joint three slightly shorter than two, four nearly quadrate, five to ten each slightly broader than its predecessor, the first of them slightly, the last distinctly transverse; eleventh joint rather stout, about as long as the two preceding. The head is a little

narrower than the thorax, indistinctly punctured. The thorax is slightly but distinctly narrower than the elytra, its breadth fully half as great again as its length, about as broad at the anterior as at the posterior angles, finely and thickly punctured, and finely but rather roughly pubescent. The elytra are fully one-third longer than the thorax, closely and finely punctured. The abdomen is punctured much as in *H. sericea*, but not quite so sparingly. The legs are rather dusky testaceous.

Rare. I have found single specimens in several parts of Scotland.

Obs.—I have examined two specimens of *H. subtilis* sent by Herr Scriba to Mr. Crotch; these differ from my specimens by being a little larger and broader, and having no channel or impression at the back of the head. These two specimens are, however, females, while I believe all my Scotch examples to be males; they have the apex of the seventh abdominal segment very indistinctly truncate. This species resembles *H. celata* in some respects, but its abdomen is much more sparingly punctured.

118. *Homalota indubia.*

Nigra, sat nitida, tenuiter pubescens, parce punctata, pedibus piceis; antennis articulis 5-10 minus fortiter transversis; thorace transverso; abdomine supra segmentis 2-4 parce subtiliter punctatis, 5° et 6° fere lævigatis. Long. $\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali margine posteriore sat fortiter crenulato.

Scarcely larger than *H. sericea*, but blacker, still more sparingly pubescent and therefore more shining, with the antennæ not quite so stout, and the seventh abdominal segment crenulate in the male. The antennæ are black, moderately stout, a little thickened towards the apex; joints two and three longer and more slender than in *H. sericea*, three not quite so long as two, four about as broad as three, and about as long as broad, five slightly transverse, ten pretty distinctly so; eleventh joint pointed, about as long as the two preceding. The head is narrower than the thorax, but broad, the disc flat, punctuation and pubescence almost absent. The thorax is

but little narrower than the elytra, its breadth quite half as great again as its length, as broad at the anterior as at the posterior angles, finely and sparingly punctured and pubescent, with a small indistinct impression in front of the scutellum. The elytra are about a third longer than the thorax, rather sparingly punctured and pubescent, the punctuation rather more distinct than on the thorax. The abdomen is black and shining; segments two to four sparingly punctured, five and six almost impunctate. Legs pitchy.

In the male, the apex of the seventh abdominal segment is distinctly, and, for a small species, even coarsely crenulate.

Rare. I have found it at Thornhill, and near Edinburgh and Dumfries.

119. *Homalota indiscreta.*

Subdepressa, nigra, subnitida, pedibus fuscis, confertim subtiliter punctata; thorace transverso, basi foveolato; abdomine supra segmentis 2-4 subtiliter sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. $\frac{3}{4}$ lin.

Closely allied to *H. sericea*, but darker in colour, more depressed, rather broader but more narrowed to the front, the pubescence finer, denser, and more regular, and the elytra longer in proportion to the thorax. The antennæ are entirely black, rather stout, thickened towards the apex; joint two longer than three, four about as broad as three, and about as broad as long, five to ten transverse, the first of them slightly, the last strongly so; eleventh joint about twice as long as the tenth. Head narrower than the thorax, much narrower than the elytra, finely and indistinctly punctured, and sometimes with an obscure channel or fovea in the middle. The thorax is a little narrower than the elytra, its breadth about half as great again as its length, rather narrower at the anterior than at the posterior angles, finely and pretty closely punctured, and with a very delicate pubescence, with a shallow transverse fovea in front of the scutellum. The elytra are black or pitchy-black, fully one-third longer than the thorax, finely and thickly punctured, and delicately pubescent. The abdomen is black and shining, segments

two to four finely, scarcely closely, punctured, fifth segment very sparingly punctured, sixth nearly impunctate. The legs are testaceous, the tibiæ a little lighter than the femora.

I am unable to point out satisfactory characters to distinguish the male of this species.

Rare. I have found it at Thornhill, and in Inverness-shire.

Obs.—This species is allied to *H. indubia*, but is distinguished by its shorter antennæ more thickened towards the apex, of which joints five to ten are distinctly transverse, and the uncrenulate seventh abdominal segment of the male.

120. *Homalota mortuorum.*

Nigra, subopaca, thorace elytrisque confertim subtiliter punctatis et tenuissime pubescentibus, pedibus fuscis; abdomine supra segmentis 2-4 subtiliter punctatis, 5° et 6° fere lævigatis. Long. ⅔ lin.

Atheta mortuorum, Th. Sk. Col. ix. 281.

Closely allied to *H. sericea*, but smaller and blacker, with the thorax and elytra thickly and finely punctured, and densely and extremely finely pubescent; the antennæ also are shorter than in *H. sericea*, the basal joints being less elongate. The antennæ are black, short and stout, thickened towards the apex; joint two short and stout, longer than three, three short and triangular, four to ten distinctly transverse, this last strongly so; eleventh joint stout, about twice the length of the tenth. The head is black, dull, finely and indistinctly punctured, with an indistinct impression on the middle. The thorax is a little narrower than the elytra, its breadth about one-third greater than its length, dull, thickly and very finely punctured, sometimes with a short channel in front of the scutellum. The elytra are rather short, about a fourth longer than the thorax, very finely and densely punctured and pubescent. The abdomen is black and moderately shining, segments two to four finely and rather sparingly punctured, five and six almost impunctate. Legs pitchy.

The male appears to differ but little from the female.

Rare. I have found it only in Scotland, at Rannoch in Perthshire, and at Thornhill.

Obs.—I have little doubt this is the *mortuorum* of Thomson; it is allied to *H. indiscreta*, but is smaller, less shining, has shorter antennæ and elytra, and a less transverse thorax.

121. *Homalota atricolor.*

Linearis, subdepressa, vix nitida, nigra, elytris pedibusque nigro-fuscis, confertim subtiliter punctata, et tenuiter pubescens; thorace transverso, basin versus subangustato; abdomine supra segmentis 2-4 crebre subtiliter punctatis, 5° parce punctato. Long. $\frac{2}{3}$ lin.

Var.—Elytris pedibusque nigris, concoloribus.

Mas; abdomine segmento 7° dorsali apice truncato.

H. inconspicua, Wat. Cat. (*nec* Er.).

A very small, black, rather parallel and depressed species, with close and fine but distinct punctuation and pubescence. The antennæ are black, thickened towards the apex; joints two and three short and stout, two longer and stouter than three, from joint four thickened towards the apex, four about as broad as three, nearly as long as broad, the others to the tenth transverse; eleventh joint about as long as the two preceding. Head but little narrower than the thorax, rather quadrate, rather long in proportion to its breadth, the eyes a little prominent, finely and closely punctured, the punctuation consisting of fine elevations, so that the surface appears rough, with a distinct channel or impression on the middle. Thorax a little narrower than the elytra, its breadth fully half as great again as its length, a little narrowed behind, finely and closely punctured. The elytra are black or pitchy-black, one-half or one-third longer than the thorax, closely and finely punctured. The abdomen is black and shining, segments two to four rather closely and finely but somewhat roughly punctured, fifth segment more sparingly punctured, sixth nearly impunctate. Legs black, or pitchy-black.

In the male, the apex of the dorsal plate of the seventh abdominal segment is truncate in the middle.

Extremely abundant in Scotland, in carcases, dung, &c.; also near London, but not so common there.

Obs.—This species is intermediate between *H. mortuorum* and *inquinula;* it is a little smaller than the

former, considerably narrower, and not so closely and finely punctured, so that it is not so dull. It is considerably larger than *inquinula*, and much darker in colour. Its punctuation is peculiar, being fine but distinctly rough.*

122. *Homalota inquinula.*

Linearis, nigra, subnitida, elytris fuscis, pedibus fusco-testaceis; thorace transverso, basin versus subangustato; abdomine supra segmentis 2-4 sat crebre subtiliter punctatis, 5° parce punctato. Long. ½ lin.

Mas; abdomine segmento 7° dorsali apice truncato.

Aleochara inquinula, Grav. Micr. 78; *H. inquinula*, Er. Käf. Brand. i. 334; Gen. et Spec. Staph. 116; Kr. Ins. Deutsch. ii. 297; Wat. Cat.

The smallest species of the genus; narrow, and with fine and pretty close punctuation and pubescence. The antennæ are short and comparatively stout, thickened towards the apex, the three basal joints stout; joint two stouter and much longer than three, this much narrowed at the base, four to ten transverse, the first slightly, the last distinctly so; eleventh joint stout and pointed, about as long as the two preceding. The head is rather narrower than the thorax, rather long in proportion to its breadth, closely, finely, and indistinctly punctured, with a distinct channel or impression on the middle. The thorax is a little narrower than the elytra, its breadth about one-third greater than its length, a little narrowed behind, closely and finely punctured, and sometimes with a longitudinal channel. The elytra are about one-third longer than the thorax, of an obscure brownish or pitchy colour, thickly and finely punctured. The abdomen is black and shining, segments two to four finely and pretty closely punctured, fifth segment finely and sparingly punctured, sixth still more sparingly punctured. The legs are dirty yellow, or pitchy in colour.

In the male, the apex of the dorsal plate of the seventh abdominal segment is a little truncate in the middle.

Local; but common in dung in sandy places in the centre and south of England. I have not found it in Scotland.

* I have only lately distinguished this species from the preceding one, and have named many specimens of it as *H. mortuorum*, Th. I mention this, that those for whom I have done so, may make the change of name where necessary.

Section G.

Group XVIII. *Abdomen rather narrowed towards the apex; the hinder angles of the thorax well marked; habitat in ants' nests.* (Species 123—125).

Of this group, *H. flavipes* and *confusa* are closely allied, but *anceps* has an entirely different facies.

123. *Homalota anceps.*

Fusco-nigra, opaca, confertim punctata, antennarum basi pedibus anoque obscure testaceis; thorace transverso, plano, canaliculato, angulis posticis haud rotundatis; abdomine supra confertim subtilissime, apice minus crebre punctato. Long. $1\frac{1}{4}$ lin.

H. anceps. Er. Käf. Brand. i. 336; Gen. et Spec. Staph. 125; Kr. Ins. Deutsch. ii. 264; Wat. Cat.; *Lyprocorrhe anceps,* Th. Sk. Col. iii. 108.

A peculiar and distinct species; the head, thorax, and elytra being harder than in the other species of the genus, and clothed with an extremely short, and scarcely visible pubescence; it has somewhat the appearance of a small *H. fungi,* but is flatter and duller. The antennæ are pitchy, paler at the base, moderately long, rather slender, scarcely thickened towards the apex; joints two and three of nearly equal length, moderately long, four to ten each differing but little from one another in length, the first of them distinctly longer than broad, the last of them about as long as broad; the eleventh joint about as long as the two preceding. The head is considerably narrower than the thorax, rather broad and short, very finely and closely punctured, a little shining. The thorax is at the base about as broad as the elytra, its breadth nearly twice its length, distinctly narrower at the anterior than at the posterior angles, the latter being distinct and not rounded; the surface of the thorax is flat, and has a distinct longitudinal channel in the middle, it is thickly and pretty finely punctured, and has sometimes one or two irregular little pits, or impressions. The elytra are rather short, about one-third longer than the thorax, closely and pretty distinctly punctured, dull. The abdomen is closely and finely punctured, with a distinct moderately long pubescence. The legs are yellowish.

The male is difficult to distinguish; it has the ventral plate of the seventh abdominal segment narrower, and more produced than in the female.

Abundant in England and Scotland, in the nests of *Formica rufa*.

124. *Homalota flavipes.*

Nigra, sat nitida, antennarum basi pedibus anoque rufo-testaceis, elytris rufo-brunneis, abdomine piceo; thorace transverso, angulis posticis haud rotundatis; abdomine supra segmentis 2-4 parce punctatis, 5° et 6° lævigatis. Long. $1\frac{2}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice fere triangulariter emarginato.

Aleochara flavipes, Grav. Mon. 161; *H. flavipes*, Er. Gen. et Spec. Staph. 124; Kr. Ins. Deutsch. ii. 263; Wat. Cat.; *Notothecta flavipes*, Th. Sk. Col. iii. 107.

A rather broad, robust species, narrowed before and behind. The antennæ are pitchy in colour, yellowish at the base, the apical joint also sometimes obscurely yellow; they are moderately long, scarcely thickened towards the apex, and pretty distinctly furnished with projecting hairs; joints two and three are of about equal length, four to ten differ but little from one another in length and breadth, each as long as broad; eleventh joint long and rather slender, pointed, longer than the two preceding together. The head is narrower than the thorax broad and short, black and shining, finely and indistinctly punctured. The thorax is black, or pitchy-black, a little narrower than the elytra, twice as broad as long, narrower at the anterior than at the posterior angles; the base a little sinuate on each side near the external angles, which are distinct and not at all depressed, moderately closely and pretty distinctly punctured, with an indistinct impression in front of the scutellum. The elytra are brownish or reddish-brown, scarcely shining, about one-third longer than the thorax, much broader than long, pretty closely and distinctly, and somewhat rugulosely punctured. The abdomen is black and shining, pitchy at the base, reddish-yellow at the extremity; segments two to four are sparingly punctured, five and six impunctate. The legs are reddish-yellow.

In the male, the hind margin of the seventh segment of the abdomen is distinctly emarginate in the middle.

Abundant in the nests of *Formica rufa*, all over the kingdom.

125. *Homalota confusa.*

Nigra, sat nitida, antennarum basi pedibus anoque rufo-testaceis, elytris rufo-brunneis, abdomine piceo; thorace transverso, angulis posticis haud rotundatis; antennis articulis 5-10 transversis; abdomine supra segmentis 2-4 sat crebre punctatis, 5° parce punctato. Long. 1½ lin.

Mas; abdomine segmento 7° dorsali apice fere triangulariter emarginato.

H. confusa, Maerk. Germ. Zeit. v. 215; Kr. Ins. Deutsch. ii. 264; Wat. Cat.; *Notothecta confusa*, Th. Sk. Col. iii. 107.

Very closely allied to *H. flavipes*, but rather smaller, and with the antennæ shorter and stouter, so that of joints five to ten each one is distinctly broader than long. The abdomen is more closely punctured, the base of the fifth segment being distinctly punctured. Its structure and punctuation generally are extremely like *H. flavipes*.

I have never found this species, but it has occurred to Mr. F. Smith and others, in the nests of *Formica fuliginosa*.

Section H.

Group XIX. *Small or very small species; abdomen only a little narrowed towards the apex, closely punctured; thorax but little narrowed towards the front.*

(Species 126—131).

The species of this group have indistinct male characters; *H. nigra, germana*, and *hodierna*, are found in vegetable refuse matter; *sordidula, celata*, and (I believe) *canescens*, in dung.

126. *Homalota nigra.*

Linearis, sat nitida, nigra, pedibus fuscis, confertim subtiliter punctata, et tenuiter pubescens; thorace leviter transverso; abdomine apicem versus subangustato, supra toto confertim subtiliter punctato. Long. ⅘-1 lin.

Mas; abdomine segmento 7° dorsali apice obsolete quadridentato.

H. nigra, Kr. Ins. Deutsch. ii. 287; Wat. Cat.

A small, rather narrow, black species, shining, but clothed with a fine pubescence, giving it a somewhat gray appearance. The antennæ are black, of moderate length and thickness, a little thickened towards the apex; the first joint is stout, two and three of moderate length and thickness, two longer than three, this latter much narrowed at the base, four scarcely broader than the preceding one, about as long as broad, from this to the tenth each one a little broader than its predecessor, none of them, however, being strongly transverse, and sometimes appearing but little broader than long; eleventh joint about as long as the two preceding together. The head is smaller than the thorax, rather small, black and shining, finely and indistinctly punctured, sometimes indistinctly channelled or impressed. The thorax is a little narrower than the elytra, about a third broader than long, very finely and closely punctured, with an indistinct impression in front of the scutellum, from which proceeds a fine channel, sometimes scarcely to be distinguished. The elytra are about a third longer than the thorax, closely and finely punctured. The abdomen is a little narrowed towards the apex, closely finely and evenly punctured above, segments five and six somewhat more sparingly than the preceding ones. The legs are pitchy.

In the male, the apical angles of the dorsal plate of the seventh abdominal segment are acute, and even a little produced, and the hind margin is furnished besides with two small indistinct projections, the distance between which is about the same as that between each one and the lateral tooth.

In the female, the middle of the hind margin of the same segment is slightly and indistinctly emarginate in the middle.

Extremely abundant, in vegetable refuse, all over England and Scotland.

127. *Homalota germana.*

Nigra, vix nitida, pedibus fuscis, confertim evidenter punctata, et tenuiter pubescens; thorace transverso;

abdomine apicem versus subangustato, supra toto confertim punctato. Long. $\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice obsoletissime quadridentato.

Scarcely smaller than *H. nigra*, but distinctly broader in proportion, with a shorter and more transverse thorax, and more distinct and rougher punctuation. The antennæ are formed much as in *H. nigra*, only rather shorter. The head is rather shorter than in *H. nigra*, black, dull, rather sparingly but distinctly and roughly punctured, in the male with a distinct channel or impression. The thorax is a little narrower than the elytra, its breadth more than half as great again as its length, closely and finely but distinctly punctured, sometimes with an indistinct longitudinal channel. The elytra are about a third longer than the thorax, closely and finely punctured. The abdomen is black, a little shining, closely and finely but distinctly punctured, the punctuation not closer but more distinct than in *H. nigra*. The legs are pitchy.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is formed much as in *H. nigra*, the teeth, however, are still more indistinct, and scarcely to be detected.

This species appears to be generally distributed, and pretty common, especially in Scotland. It is probably mixed in collections with *H. nigra*.

128. *Homalota hodierna*.

Nigra, vix nitida, elytris fuscis, pedibus fusco-testaceis, crebre subtiliter punctata; antennis subelongatis, articulis haud transversis; thorace leviter transverso, canaliculato; abdomine supra toto confertim subtiliter punctato. Long. 1 lin.

Mas; capite impresso; abdomine segmento 7° dorsali apice quadridentato.

Closely allied to *H. nigra*, but larger than the largest of that species, more robustly formed, and at once distinguished by its longer antennæ, less thickened towards the apex. The antennæ are pitchy-black, obscurely paler at the base, rather long and slender, scarcely at all thickened towards the apex; joint two a little longer

than three, three narrowed at the base, four to ten differing but little from one another in length, the length of each a little greater than its breadth; eleventh joint long (much longer than in *H. nigra*), more than twice the length of the tenth. The head is broader and shorter than in *H. nigra*, in the male distinctly channelled and impressed. The thorax is a little narrower than the elytra, about one-third broader than long, thickly and finely punctured, with a distinct central longitudinal channel. The elytra are about one-third longer than the thorax, of an obscure brownish or fuscous colour, closely and finely punctured. The abdomen is a little narrowed towards the apex, its upper surface densely and finely punctured and pubescent, segments five and six rather more sparingly so than the preceding ones. Legs dusky yellow.

In the male, the hind margin of the seventh abdominal segment is furnished with four short projecting teeth much as in *H. nigra*. I have not seen a specimen of the female.

I have captured four specimens of this species at Horning, in Norfolk, and have seen it also in Mr. Crotch's collection. M. Brisout de Barneville has also submitted to me a French example, marked "Lille, roseaux."

129. *Homalota celata.*

Nigra, subopaca, confertim subtiliter punctata, antennarum basi elytrisque fuscis, pedibus obscure testaceis; thorace transverso, basi obsolete canaliculato; abdomine segmentis 2-4 crebre subtiliter, 5° et 6° parcius punctatis. Long. $\frac{3}{4}$ lin.

Mas; abdomine segmento 7° dorsali apice 4-dentato.

H. celata, Er. Käf. Brand. i. 335; Gen. et Spec. Staph. 122; Kr. Ins. Deutsch. ii. 320. *Atheta dadopora,* Th. Sk. Col. ix. 283.

A small, but rather robust, obscure species, readily distinguished from *H. sericea,* and its allies, by its more densely punctured abdomen; broader than *H. sordidula,* and not so flat or depressed. The antennæ are moderately stout, blackish, obscurely paler at the base, not thickened after the sixth joint; joint two is longer than three,

four scarcely broader than three, nearly as long as broad, five distinctly broader than four, from this to the tenth the joints differ but little from one another, the breadth of each is a little greater than its length ; the eleventh joint is rather long, quite as long as the two preceding together. The head is broad, a little narrower than the thorax, pretty closely and finely but distinctly and rather roughly punctured, sometimes with an indistinct impression on the disc. The thorax is a little narrower than the elytra, its breadth about half as great again as its length, the sides gently rounded, nearly as broad at the anterior as at the posterior angles, closely and finely but distinctly and rather roughly punctured, and with a more or less distinct longitudinal channel in front of the scutellum. The elytra are about a fourth longer than the thorax, brownish or fuscous in colour, pretty closely and distinctly punctured. The abdomen is black, pitchy at the extremity, a little shining, segments two to four are closely and distinctly punctured, fifth and sixth segments moderately closely punctured. The legs are rather dirty yellow.

The hind margin of the upper plate of the seventh abdominal segment is furnished, in the male, with four small teeth, one at each angle and two in the middle, of these the external ones are the more distinct, the notch separating the two middle ones is broad, but very shallow.

Rare. I have found single specimens in two or three localities near London.

Obs.—I have examined a specimen of *A. dadopora*, sent by Thomson to Mr. Crotch ; it is of this species. Thomson considers (*vide loc. cit.*) that Erichson's description of *H. celata* probably refers to Kraatz's *H. nigra*. In this suspicion he is not improbably correct, but I think it better not to change the names, until the question is put beyond doubt by the examination of Erichson's specimens.

130. *Homalota sordidula.*

Nigra, pedibus fuscis, opaca, confertim subtiliter punctata ; antennis sat elongatis, articulo ultimo oblongo ; thorace leviter transverso, subtiliter canaliculato ; abdomine supra toto confertim subtiliter punctato. Long. $\frac{3}{4}$ lin.

H. sordidula, Er. Käf. Brand. i. 335; Gen. et Spec. Staph. 123; Kr. Ins. Deutsch. ii. 296; Wat. Cat.; *Atheta sordidula,* Th. Sk. Col. iii. 91.

A small narrow species, with pretty distinctly pointed abdomen, and elongate terminal joint to the antennæ. The antennæ are long for the small size of the species, black, the two basal joints sometimes obscurely pitchy, not thickened after the fifth or sixth joint; joints two and three rather stout, two longer than three, four smaller than any of the others, but little broader than three, rather transverse, five broader and longer than four, from it to the tenth the length of each joint is nearly equal to its breadth; eleventh joint long, oblong, longer than the two preceding. The head is small, distinctly narrower than the thorax, much narrower than the elytra, its sides a little straight behind the eyes, pretty closely and finely but distinctly punctured, generally with an indistinct longitudinal impression on the front part. The thorax is a little narrower than the elytra, its breadth about one-third greater than its length, finely and closely punctured, and with a fine but distinct longitudinal channel in front of the scutellum. The elytra are about a fourth longer than the thorax, closely and finely punctured. The abdomen is distinctly narrowed towards the apex, its upper surface closely and finely and evenly punctured, the pubescence dense. The legs are pitchy-yellow.

The male is scarcely to be distinguished from the female.

In dung, both in England and Scotland, but apparently scarce or overlooked.

131. *Homalota canescens.*

Nigra, opaca, pedibus fuscis, confertim punctata; antennis articulis 5-10 transversis; thorace transverso, subtiliter canaliculato; abdomine supra toto confertim subtiliter punctato. Long. $\frac{2}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice obsolete 4-dentato.

Allied to *H. sordidula,* broader and more parallel, with the antennæ, especially the terminal joint, shorter, the thorax shorter, and the punctuation throughout not quite so close and fine. The antennæ are blackish, of moderate

length and stoutness, but indistinctly thickened towards the apex; joint three shorter and more slender than two, narrowed towards the base, four smaller than the others, about as broad as three, nearly as long as broad, five to ten differing but little from one another in length, each one slightly broader than its predecessor, the breadth of each evidently greater than its length; eleventh joint rather stout, a little pointed, about as long as the two preceding together. The head is rather broad, a little narrower than the thorax, finely but distinctly and rather roughly punctured, generally with a longitudinal impression on the disc. The thorax is but little narrower than the elytra, its breadth more than half as great again as its length, closely and finely but distinctly punctured, and with a short, not very distinct, channel in front of the scutellum. The elytra are fully one-third longer than the thorax, closely and finely punctured. The abdomen is scarcely narrowed towards the apex, finely, evenly, and closely punctured. The legs are pitchy-yellow.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is furnished with four small indistinct equidistant teeth, which are placed much as in *H. celata*, but are smaller.

Rare. Thornhill, Brockenhurst, Weybridge, Croydon. In dung, I believe.

Obs.—This species is readily distinguished from *H. celata* by its smaller size, more depressed form, darker colour, and more closely punctured apical segments of the abdomen.

Group XX. *Species of moderate size, abdomen slightly or moderately narrowed towards the apex, thorax scarcely or moderately narrowed towards the front.*

(Species 132—142).

A tolerably natural group, which might, however, be subdivided into several others. *H. marcida, intermedia,* and *cadaverina,* are found in moss and vegetable matter; the other species frequent dung, and *cinnamoptera* is often found in small carcases.

132. *Homalota marcida.*

Nigra, sat nitida, antennis piceis, pilosellis, basi pedibusque testaceis, elytris fuscis; thorace leviter transverso,

basi foveolato; elytris hoc sesqui longioribus; abdomine apicem versus vix angustato, supra segmentis 2-4 parce subtiliter punctatis, 5° et 6° fere lævigatis; tibiis posterioribus intus evidenter ciliatis. Long. 1½-1⅔ lin.

Mas; abdomine segmento 7° dorsali margine posteriore obsolete incrassato, ventrali medio obtuse acuminato.

Fem.; abdomine segmento 7° dorsali margine posteriore obsolete emarginato, fere truncato, ventrali late rotundato, dense subtiliter ciliato.

H. marcida, Er. Käf. Brand. i. 328; Gen. et Spec. Staph. 106; Kr. Ins. Deutsch. ii. 298; Wat. Cat.

A peculiar species, scarcely to be confounded with any others, and in many respects resembling *H. occulta* and its allies. The antennæ are long, scarcely thickened towards the apex, brownish, with the three or four basal joints yellow, furnished throughout their length with longish, very fine, outstanding hairs; the first joint is stout, with a long conspicuous seta on its upper side; joints two and three are rather long, three a little longer than two, four and five a little stouter than three, each longer than broad, six to ten each about as long as broad; eleventh joint scarcely so long as the two preceding. The head is rather small, narrower than the thorax, narrowed behind the eyes, which are a little prominent, sparingly and indistinctly punctured. The thorax is distinctly narrower than the elytra, about a third broader than long, a little narrowed behind, moderately closely and finely but distinctly and roughly punctured, with a few long outstanding hairs at the sides, and an indistinct transverse impression in front of the scutellum. The elytra are long and parallel, longer than broad, fully half as long again as the thorax, of a brownish colour, distinctly, rather roughly, and closely punctured. The abdomen is shining, scarcely narrowed towards the apex, which is often paler; segments two to four very sparingly and finely punctured, the apical ones almost impunctate, the sides and apex furnished with distinct outstanding hairs. The legs are yellow, the middle tibiæ on the outside about the middle with a distinct outstanding seta, the posterior tibiæ with a very small and indistinct seta in the middle on the outside, on the inside finely but distinctly ciliate throughout their whole length, these cilia are yellow, and about twelve in number.

In the male, the third joint of the antennæ is more densely furnished with fine outstanding hairs; the dorsal plate of the seventh abdominal segment is narrow, indistinctly rounded at the apex, which is obscurely thickened, and the under plate of the same segment is a little produced in the middle, so as to form an obtuse angle; while in the female, the ventral plate of the same segment is broad and rounded, and furnished with closely-set fine parallel cilia.

In England and Scotland, but never very common.

133. *Homalota intermedia.*

Subdepressa, antice sat nitida, subtiliter punctata, tenuiter pubescens, nigra, antennarum basi obscure testacea, elytris pedibusque testaceis; thorace transversim subquadrato; abdomine apicem versus attenuato, nitidulo, segmentis 2-5 crebre subtiliter punctatis, 6° parce punctato. Long. $1\frac{1}{2}$-$1\frac{3}{4}$ lin.

H. intermedia, Th. Öfv. Vet. Ac. Förh. 1852, p. 145; Kr. Ins. Deutsch. ii. 301; Wat. Cat.; *Atheta intermedia*, Th. Sk. Col. iii. 95.

This species a good deal resembles *H. xanthoptera* and its allies, but has the abdomen distinctly narrowed to the apex, and its segments more punctured. The antennæ are long and rather stout, scarcely thickened towards the apex; joints two and three long, three longer than two, four about as stout as three, and little less than the other joints, longer than broad, five to ten each about as long as broad, ten, however, a little shorter than the others; the eleventh joint is long, gently pointed, about as long as the two preceding together. The head is narrower than the thorax, but rather broad, finely and indistinctly punctured. The thorax is rather large, a little narrower than the elytra, about a third broader than long, the sides nearly straight, a little rounded at the anterior angles, finely and pretty closely punctured, with a small narrow impression at the base in front of the scutellum. The elytra are yellow, a little darker about the scutellum and at the outsides, closely and finely punctured, about a fourth longer than the thorax. The abdomen is black, rather shining, distinctly narrowed towards the apex; segments two to five finely, evenly, and pretty closely punctured, the fifth rather more sparingly than the basal

ones, the sixth segment shining, and very sparingly punctured; the sides are rather sparingly furnished with outstanding setæ, the apex more distinctly. The legs are bright yellow, the middle tibiæ with a short indistinct outstanding seta about the middle, the hinder ones without any exserted seta.

The male has the ventral plate of the seventh abdominal segment narrower and longer than the female.

This species occurs sparingly in various parts of Scotland; Rannoch, Thornhill, Strath Cannich; also, but very rarely, in the neighbourhood of London.

134. *Homalota longicornis.*

Subdepressa, nitidula, nigra, elytris pedibus anoque brunneo-testaceis; antennis elongatis, articulo quarto transverso; abdomine supra confertim subtiliter punctato; tibiis intermediis et posticis setis exsertis longioribus. Long. 1½ lin.

Mas; abdomine segmento 7° dorsali apice obsolete emarginato.

Fem.; abdomine segmento 7° ventrali apice ciliato, medio emarginato.

Aleochara longicornis, Grav. Mon. 87; *H. longicornis,* Er. Gen. et Spec. Staph. 129; Kr. Ins. Deutsch. ii. 302; Wat. Cat.; *Atheta longicornis,* Th. Sk. Col. iii. 95.

A very distinct species; the much developed, long antennæ, the yellowish elytra, the much pointed and thickly punctured abdomen, and the very long exserted setæ of the tibiæ are quite sufficient to distinguish it. The antennæ are long and stout, not thickened after the seventh joint, nearly black, with the first joint pitchy, the basal joints with distinct exserted hairs; joint three considerably longer than two, four much smaller than any of the others, its length distinctly less than its breadth, from five to ten each joint is distinctly longer than its predecessor, the fifth not quite so long as broad, the tenth longer than broad; eleventh joint long, obtusely pointed, quite half as long again as the tenth. The head is comparatively small, considerably narrower than the thorax, black and shining, sparingly and finely punctured, but with the pubescence distinct. The thorax is scarcely narrower than the elytra, its breadth about half as great

again as its length, the sides gently rounded, slightly narrowed in front, rather finely and not closely punctured, the pubescence rather long, the sides with a few distinct long outstanding hairs. The elytra are brownish-yellow, darker about the scutellum and towards the sides, closely and rather strongly punctured, a little longer than the thorax. The abdomen is black, strongly narrowed towards the apex,which is pitchy, densely and evenly punctured, the sides and apex with distinct outstanding hairs. The legs are dark yellow, with the femora infuscate, the middle and posterior tibiæ each with two long exserted hairs, one a little below the knee, the other a little beyond the middle, they are also pretty closely furnished with short cilia both on the inner and outer sides.

In the male, the apex of the dorsal plate of the seventh abdominal segment is indistinctly emarginate, the ventral plate rounded.

In the female, the ventral plate has the hind margin furnished with short parallel cilia, and is distinctly emarginate in the middle.

Extremely abundant in dung, all over the country.

135. *Homalota macrocera.*

Nigra, sat nitida, crebre subtiliter punctata, elytris fuscis, pedibus piceo-testaceis; antennis longioribus, articulo ultimo oblongo, elongato; thorace leviter transverso, obsolete canaliculato; abdomine apicem versus angustato, supra segmentis 2-4 crebre subtiliter punctatis, 5° minus crebre, 6° parce punctato. Long. 1 lin.

H. macrocera, Th. Öfv. Vet. Ac. Förh. 1856, p. 106; *Atheta macrocera*, Th. Sk. Col. iii. 96.

A rather narrow species, with evidently pointed abdomen. Antennæ rather long, not (or scarcely) thickened towards the apex; joints two and three of about the same length, four smaller than five, longer than broad, five to nine differing but little from one another in length and breadth, each distinctly longer than broad, ten about as long as broad; eleventh joint elongate, oblong, quite as long as the two preceding together. The head is a little narrower than the thorax, pretty closely and finely but distinctly and rather roughly punctured, sometimes with an indistinct channel. The thorax is a little narrower

than the elytra, about a third broader than long, the sides gently rounded, scarcely narrower at the anterior than at the posterior angles, the sides with a few fine outstanding setæ, pretty closely and finely punctured, with a fine longitudinal channel in front of the scutellum, varying in length and distinctness. The elytra are but little longer than the thorax, of an obscure fuscous colour, closely and finely punctured. The abdomen is strongly narrowed to the apex, black, the apex sometimes obscurely paler; segments two to four pretty closely and finely punctured, fifth segment more sparingly but distinctly punctured, sixth very sparingly punctured; the sides and apex, as well as the hind margins of the segments, with numerous distinct outstanding black setæ. The legs are dirty yellow, the middle and hinder tibiæ with a distinct outstanding seta on the middle.

I have found this species in numbers, in dung, near Thornhill, and rarely in other parts of Scotland, but never in England.

Obs.—This is not very closely allied to any other species.

136. *Homalota cadaverina.*

Lata, subdepressa, nigra, antice parum nitida; thorace transverso, basi vix foveolato; elytris hoc distinctius punctatis; abdomine nigerrimo, nitidulo, supra segmentis 2-4 parce punctatis, 5° et 6° fere lævigatis; pedibus rufis, femoribus piceis. Long. 1½ lin.

Var.—Elytris fuscis.

H. cadaverina, Bris. Ann. Soc. Ent. Fr. 1860, p. 341.

A fine and distinct species, broader than the others of this group, the head especially being broad. The antennæ are black, moderately long, rather slender, but little thickened towards the apex; joints two and three long and rather slender, two a little the longer; of the following joints the first three or four are longer than broad, the subsequent ones but little broader than long, the penultimate one being scarcely transverse; eleventh joint moderately long, rather pointed, about as long as the two preceding together. The head is broad, but distinctly narrower than the thorax, sparingly and indistinctly punctured. The thorax is a little narrower than the elytra, not quite twice as broad as long, the sides

slightly rounded, scarcely narrower at the anterior than at the posterior angles, finely and rather sparingly punctured, sometimes with a fine indistinct longitudinal channel, the sides with two or three short exserted setæ. The elytra are about a fourth longer than the thorax, closely, rather strongly, somewhat rugulosely punctured, their punctuation much stronger than that of the thorax. The abdomen is black and shining, pretty distinctly narrowed towards the apex, segments two to four sparingly punctured, fifth segment very sparingly and finely punctured, sixth segment nearly impunctate; the sides and apex furnished with numerous distinct outstanding hairs. The legs are reddish, the thighs pitchy, tibiæ without exserted setæ, the posterior ones rather long and slender, their tarsi long and pointed.

The male is only to be distinguished from the female by the narrower and more produced ventral plate of the seventh abdominal segment.

I have found one or two specimens of this species near London, and have obtained a fine series, from heaps of cut grass, at Thornhill.

Obs.—I have compared these specimens with M. Brisout's type of *H. cadaverina*, and find they agree in all points with it.

137. *Homalota lævana.*

Nigra, sat nitida, elytris brunneis, pedibus testaceis; thorace transverso, elytris angustiore; abdomine apicem versus minus fortiter angustato, supra segmentis 2-4 sat crebre punctatis, 5° parce punctato, 6° fere lævigato. Long. $1\frac{1}{4}$-$1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice leviter emarginato, utrinque denticulis 2 subapproximatis.

H. lævana, Muls. Opusc. i. 39; Kr. Ins. Deutsch. ii. 306.

Resembles both *H. cinnamoptera* and *atramentaria;* distinguished from the former by the antennæ stouter towards the apex, the head thorax and elytra more shining and less densely punctured, the abdomen less narrowed towards the apex and more sparingly punctured; from *H. atramentaria* by the stouter antennæ, unicolorous brown elytra, pale legs, and narrower thorax.

The antennæ are of moderate length and stoutness, slightly but distinctly thickened towards the apex, pitchy-black, with the basal joints scarcely lighter; first joint stout, two and three of about equal length, four smaller than the others, scarcely broader than three, about as long as broad, the length of the following joints differs but little from their breadth, the two or three penultimate joints a little transverse; eleventh joint rather long, longer than the two preceding together. The head is rather broad, a little narrower than the thorax, sparingly and moderately finely punctured, rounded behind the eyes, sometimes with a small impression on the disc. The thorax is distinctly narrower than the elytra, about a third broader than long, the sides gently rounded in front, little narrowed behind, so that it is about as broad at the anterior as at the posterior angles, moderately closely and finely punctured, the sides with a few outstanding setæ, sometimes with a short channel in front of the scutellum, sometimes quite unchannelled. The elytra are brownish, one-third longer than the thorax, pretty closely and finely and somewhat rugulosely punctured, their pubescence (as well as that of the head and thorax) rather long. The abdomen is black, pretty distinctly narrowed towards the apex, which is sometimes pitchy, segments two to four are distinctly and not very closely punctured, fifth segment more sparingly punctured, sixth nearly impunctate; the sides and apex furnished distinctly with outstanding hairs. The legs are yellow, the middle and posterior tibiæ are furnished each with two fine projecting setæ, of which the one nearer the knee is distinctly the shorter.

In the male, the hind margin of the upper plate of the seventh segment is distinctly emarginate in the middle, the lateral margin projects on each side as a short broad tooth, and on the inner side of this, and only separated from it by an obscure notch, is another similar tooth.

Scarce. Rannoch, Inverness, Brighton, Croydon. It occurs in dung, and is, perhaps, commoner than is supposed.

138. *Homalota cinnamoptera.*

Nigra, antice subopaca, elytris obscure brunneis, pedibus testaceis; thorace transverso, basi leviter canalicu-

lato; abdomine apicem versus evidenter angustato, supra segmentis 2-4 crebre subtiliter punctatis, 5° parcius, 6° parce punctato. Long. 1¼ lin.

Mas; abdomine segmento 7° dorsali apice vix emarginato, fere truncato, angulis externis acutis.

H. cinnamoptera, Th. Öfv. Vet. Ac. Förh. 1856, p. 105; *Atheta cinnamoptera,* Th. Sk. Col. iii. 93. *H. subrugosa,* Wat. Cat.

A species with rather long antennæ, somewhat sparingly furnished with exserted hairs, its head and thorax with a dull almost brassy appearance, the elytra of a dull brownish colour. The antennæ are longer than the head and thorax, scarcely thickened toward the apex, of a blackish colour, obscurely pitchy at the base; joints two and three rather long, three a little the longer, four to nine as long as or rather longer than broad, ten scarcely shorter than broad; eleventh joint rather long, about as long as the two preceding together. Head narrower than the thorax, rather broad in proportion to its length, rounded behind the eyes, rather convex above, dull, finely and pretty closely but distinctly, even rather roughly, punctured. The thorax is a little narrower than the elytra, its breadth about half as great again as its length, the sides a little narrower at the anterior than at the posterior angles, the sides gently rounded in front, then nearly straight behind, distinctly, moderately closely, rather roughly punctured, the sides with two or three exserted hairs, with a fine longitudinal channel in the middle in front of the scutellum, sometimes extending the whole length of the thorax, sometimes only half-way. The elytra are of an obscure brownish colour, about one-third longer than the thorax, rather finely but distinctly, closely and somewhat rugulosely punctured. The abdomen is black and shining, distinctly narrowed towards the apex, segments two to four finely and rather closely punctured, fifth segment rather more sparingly punctured, sixth very finely and sparingly punctured, the sides and apex furnished with distinct rather long outstanding setæ. The legs are yellow; the middle and posterior tibiæ furnished each with two fine exserted setæ, one short, just below the knee, the other longer, a little more than half-way down.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment has the external angles more acute than in the female.

Tolerably common in vegetable refuse, and in carcases, in Scotland. I have also found it, very rarely, in the neighbourhood of London.

Obs.—Thomson has suggested that *H. putrida*, Kr., is a synomym of this species; I do not know *H. putrida*, but in any case, Thomson's name has the priority.

139. *Homalota villosula.*

Nigerrima, sat fortiter punctata; antennis apicem versus leviter incrassatis; thorace transverso; abdomine apicem versus minus fortiter angustato, supra segmentis 2-4 sat crebre, 5° et 6° parce punctatis; pedibus piceis, tarsis geniculisque dilutioribus. Long. $1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° dorsali medio producto, apice truncato, utrinque spina tenui armato; ventrali apice leviter rotundato.

Fem.; abdomine segmento 7° dorsali medio late subemarginato, utrinque denticulo brevi instructo; ventrali margine posteriore ciliato, medio minus evidenter exciso.

H. villosula, Kr. Ins. Deutsch. ii. 305; Wat. Cat.

Of a deep black colour, with the exception of the abdomen but little shining. The antennæ are black, moderately stout, distinctly thickened towards the apex; joints two and three not slender, of about equal length, four to ten each a little broader than its predecessor, the first of them as long as broad, the latter ones only slightly transverse, the tenth being a little longer than the ninth; eleventh joint rather stout, gently pointed, about as long as the two preceding together. The head is rather small, distinctly smaller than the thorax, sparingly but rather roughly punctured. The thorax is a little narrower than the elytra, its breadth about half as great again as its length, a little narrower at the anterior than at the posterior angles, pretty distinctly and not closely punctured, with an indistinct impression in front of the scutellum, and at the sides with a few outstanding setæ. The elytra are about a third longer than the thorax, closely and strongly punctured, the pubescence rather long. The abdomen is black and shining, but little narrowed except at the apical segments, segments two to four distinctly, moderately, sparingly punctured,

fifth and sixth finely and sparingly punctured, the sides and apex with distinct outstanding hairs. The legs are pitchy, the knees and tarsi reddish; the four posterior tibiæ are furnished each with two distinct long setæ, the lower ones being especially long; the posterior tarsi are stout and pointed, and the hairs with which they are furnished are conspicuous.

In the male, the dorsal plate of the seventh abdominal segment is truncate in the middle, and the lateral margin is produced behind as a long fine spine, reaching only a little beyond the broad truncate middle part, from which it is separated by a distinct space; the posterior margin of the ventral plate is gently rounded.

In the female, the hind margin of the upper plate is broadly and obsoletely emarginate in the middle, the lateral margin projects a little on each side as a short sharp tooth; the hind margin of the ventral plate is furnished with black cilia, and is somewhat excised in the middle.

In dung, generally distributed, but not very abundant. Apparently commoner in Scotland than in England.

Obs.—Whether *H. nigripes*, Th., is synonymous with this species is not certain, though it is probable from his description.

140. *Homalota atramentaria.*

Antice nigro-subænea, subnitida, abdomine nitidulo nigerrimo, pedibus piceis; thorace transverso; abdomine apicem versus vix angustato, segmentis 2-4 sat parce punctatis, 5° parcius punctato, 6° fere lævigato. Long. $1\frac{1}{4}$-$1\frac{1}{2}$ lin.

Mas; abdomine segmento 7° dorsali apice medio leviter emarginato, utrinque margine laterali acuto.

Fem.; abdomine segmento 7° dorsali apice medio emarginato.

Var.—Elytris disco plus minusve rufescentibus.

Aleochara atramentaria, Gyll. Ins. Suec. ii. 408; *H. atramentaria*, Er. Gen. et Spec. Staph. 111; Kr. Ins. Deutsch. ii. 303; Wat. Cat.; *Atheta atramentaria*, Th. Sk. Col. iii. 92.

This species is remarkable by the peculiar dull brassy lustre of the head, thorax, and elytra. The antennæ are blackish, with the basal joint pitchy, a little thickened

towards the apex, and furnished throughout pretty distinctly with exserted hairs; joints two and three of about equal length, four to ten each slightly broader than its predecessor, four to six each as long as, or a little longer than broad, seven to ten slightly broader than long; eleventh joint about as long as the two preceding together. The head is narrower than the thorax, not large, sparingly and indistinctly punctured. The thorax is a little narrower than the elytra, about a third broader than long, the sides nearly straight, about as broad at the anterior as at the posterior angles, moderately closely and finely punctured, at the sides with two or three outstanding hairs, in front of the scutellum with an indistinct transverse impression. The elytra are about a third longer than the thorax, their colour either entirely dull brassy, or more or less distinctly reddish, moderately closely and indistinctly, somewhat rugulosely punctured. The abdomen is black and shining, scarcely narrowed towards the apex; segments 2-4 finely and sparingly punctured, fifth segment still more sparingly punctured, sixth nearly impunctate, the outstanding hairs of the sides and apex not very marked. The legs are pitchy, the femora generally a little darker than the tibiæ; the middle and posterior tibiæ each with two fine short exserted setæ.

In the male, the middle of the hind margin of the seventh segment of the abdomen is a little emarginate in the middle, on each side of the emargination it is somewhat rounded, and the lateral margin projects somewhat as a short tooth, not easy to see.

In the female, the hind margin of the corresponding plate is a little emarginate in the middle.

Extremely abundant, in dung, in the most varied localities and situations, from the coasts to the tops of the mountains.

141. *Homalota setigera.*

Nigra, nitidula, elytris nigro-piceis, pedibus piceis, crebre sat fortiter punctata; antennis apicem versus leviter incrassatis, articulis 7-10 transversis; thorace leviter transverso, antice haud compresso; abdomine apicem versus subangustato, supra segmentis 2-4 sat parce punctatis, 5° parcius punctato, 6° fere lævigato. Long. 1 lin.

Mas; abdomine segmento 7° ventrali margine posteriore rotundato.

Fem.; abdomine segmento 7° ventrali apice medio exciso.

Smaller than *H. atramentaria*, the anterior parts blacker and more shining, the antennæ shorter and more thickened towards the apex. The antennæ are black, the basal joint pitchy; they are distinctly thickened towards the apex, and furnished throughout with exserted hairs much as in *H. atramentaria;* joints two and three moderately long, three scarcely so long as two, four to ten each a little broader than its predecessor, of four and five the length differs little from the breadth, the following joints gradually more transverse, the penultimate ones distinctly transverse; the eleventh joint is rather long, quite as long as the two preceding together. The head is of moderate size, a little narrower than the thorax, its punctuation moderately close, and rather rough. The thorax is distinctly narrower than the elytra, about one-third broader than long, the sides gently rounded in front, then slightly narrowed behind, not narrower at the anterior than at the posterior angles, rather closely and strongly punctured, the sides with a few exserted setæ. The elytra are about a third longer than the thorax, pitchy-black or pitchy, pretty closely and strongly punctured. The abdomen is black and shining, moderately narrowed towards the apex, segments two to four distinctly but not closely punctured, fifth segment more sparingly punctured, sixth nearly impunctate, the sides and apex furnished distinctly with outstanding setæ. The legs are pitchy, the four posterior tibiæ with two fine, rather short, exserted setæ.

In the male, the upper plate of the seventh abdominal segment is without any peculiar structure, and the hind margin of the under plate is gently rounded; while in the female this plate is distinctly excised in the middle, and the hind margin ciliate.

Generally distributed, in dung, but not very common.

Obs.—This species is confounded in collections both with *H. atramentaria* and *H. parva*. I have mentioned above, characters which will distinguish it from the former. From *H. parva*, its more thickened antennæ, broader head, less transverse thorax (which is also less narrowed in front), rather more sparing punctuation, and the shorter lower setæ of its tibiæ, distinguish it.

142. *Homalota parva.*

Nigra, nitidula, crebre punctata, et distincte pubescens; thorace transverso, basi obsolete canaliculato; pedibus piceis; abdomine apicem versus sat fortiter attenuato, segmentis 2-4 crebre, 5° et 6° parcius punctatis. Long. 1 lin.

Mas; abdomine segmento 7° ventrali margine posteriore rotundato.

Fem.; abdomine segmento 7° ventrali apice medio exciso.

Aleochara parva, Sahl. Ins. Fenn. i. 380; *H. parva,* Wat. Cat. *H. cauta,* Er. Gen. et Spec. Staph. 122; Kr. Ins. Deutsch. ii. 318; *Atheta cauta,* Th. Sk. Col. iii. 91.

A small, black, and shining species, with rather rough punctuation and pubescence. The antennæ are moderately long, not stout, but slightly thickened towards the apex; joints two and three moderately long, slender, three scarcely so long as two, four about as long as broad, the following ones slightly transverse, the tenth scarcely more so than the sixth; eleventh joint gently pointed, quite as long as the two preceding together. The head is rather small, a little narrower than the thorax, much narrower than the elytra, pretty closely and distinctly punctured. The thorax is a little narrower than the elytra, its breadth not half as great again as its length, the sides are gently rounded, and it is a little narrower at the anterior than at the posterior angles; it is moderately closely and finely, rather roughly punctured, the sides with distinct outstanding hairs; in front of the scutellum with a short indistinct channel. The elytra are black or pitchy, a little longer than the thorax, closely and moderately finely punctured. The abdomen is black, distinctly narrowed towards the apex, segments two to four distinctly and pretty closely, fifth segment more sparingly, sixth very sparingly, punctured; the outstanding setæ of the sides and apex are distinct. The legs are pitchy, the four posterior tibiæ each with two fine exserted setæ, of which the lower one is considerably the longer.

In the male, the upper and under plates of the seventh abdominal segment are without any particular structure, while in the female the hind margin of the under plate is ciliate, and excised in the middle.

Very common, in dung, as well as in other situations, all over the country.

Group XXI.—*Thorax strongly narrowed to the front; abdomen strongly pointed and thickly punctured.*

(Species 143—148).

If *H. melanaria* be excepted, the species herein contained form a natural group; *melanaria* occurs in vegetable refuse; *testudinea, aterrima,* and *pilosiventris* in dung; *pygmæa* and *muscorum,* often among moss and leaves.

143. *Homalota melanaria.*

Nigra, opaca, dense subtiliter et æqualiter punctata; antennis sat validis, piceis, pedibus elytrisque testaceis, his circa scutellum infuscatis; thorace transversim convexiusculo, æquali; abdomine apicem versus angustato, dense æqualiter punctato. Long. $1\frac{2}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice obsoletissime emarginato, ventrali angusto, producto.

Fem.; abdomine segmento 7° dorsali apice obsolete, ventrali evidenter, emarginato.

Aleochara melanaria, Sahl. Ins. Fenn. i. 389; *Coprothassa melanaria,* Th. Sk. Col. iii. 34. *H. lividipennis,* Er. Gen. et Spec. Staph. 129; Kr. Ins. Deutsch. ii. 311. *H. sordida,* Wat. Cat.

A fine large species, with bright yellow elytra, having a triangular black patch about the scutellum. The antennæ are rather long and stout, slightly thickened towards the apex, of a pitchy colour; joint three longer than two, four a little broader than three, shorter and narrower than the succeeding ones, slightly transverse, joints five to ten each a little longer and broader than its predecessor, each about as long as broad; the eleventh joint is elongate, pointed, longer than the two preceding together. The head is broad and short, much narrower than the thorax, convex above, closely and finely punctured. The thorax is, at the base, as broad as the elytra, transversely arched, its breadth fully half as great again as its length, the sides rounded, a little narrower at the anterior than at the posterior angles, closely and finely, very regularly, punctured, with a short dense regular pubescence. The elytra are about a fourth longer than the thorax, of a clear yellow colour, with a triangular black patch about the scutellum, the point of

which extends almost to the apex of the elytra, closely and finely punctured. The abdomen is narrowed towards the apex, black, with the extremity paler, and on the under side the margins of the segments brownish, closely finely and evenly punctured, the sixth segment a little more sparingly than the basal ones, densely pubescent, the sides and apex as well as the posterior margins of the segments furnished with longer outstanding black hairs. The legs are yellow, the middle tibiæ with a distinct stout exserted black seta in the middle, the posterior tibiæ without any seta.

In the male, the hind margin of the dorsal plate of the seventh segment of the abdomen is indistinctly emarginate, the under plate of the same segment is a little produced in the middle.

In the female, the hind margin of the dorsal plate of the seventh segment is a little emarginate, the under plate is pretty deeply excised in the middle, the hind margin furnished with pale, closely set, fine, parallel cilia.

Very abundant in vegetable refuse all over England and Scotland.

Obs.—Thomson has reversed the sexes of this species.

144. *Homalota testudinea.*

Nigra, pedibus elytrisque testaceis, his circa scutellum infuscatis, crebre fortiter ruguloso-punctatis; thorace transverso, convexiusculo, æquali; abdomine apicem versus fortiter angustato, supra crebre distinctius (segmento 6° parcius) punctato. Long. $1\frac{1}{3}$-$1\frac{1}{2}$ lin.

Mas; abdomine segmento 7° ventrali apice medio rotundato.

Fem.; abdomine segmento 7° ventrali apice medio leviter emarginato.

H. testudinea, Er. Gen. et Spec. Staph. 131; *Coprothassa testudinea,* Th. Sk. Col. iii. 35. *H. melanaria,* Kr. Ins. Deutsch. ii. 312; Wat. Cat.

A very distinct species, allied on the one hand to *H. melanaria,* on the other to *H. aterrima;* distinguished from the former by its smaller size, darker colour, stronger

punctuation, and less developed antennæ; from *H. aterrima* by its larger size, stouter antennæ, coarser punctuation, and differently coloured elytra. The antennæ are of moderate length and stoutness, but little thickened towards the apex, black, with the basal joint pitchy, distinctly pilose; joints one and two stout, three longer and more slender than two, four to six each about as long as broad, seven to ten each a little shorter than broad; eleventh joint as long as the two preceding together. The head is broad and short, moderately closely and distinctly punctured. The thorax is ample, as broad as, or broader than the elytra, nearly half as broad again as long, transversely convex, the sides rounded, distinctly narrower at the anterior than at the posterior angles, without exserted setæ at the sides, shining, closely and distinctly punctured. The elytra are but little longer than the thorax, of a livid yellow colour, with a large triangular common black patch, and with the sides also darker, rather strongly and closely, somewhat rugulosely punctured. The abdomen is strongly narrowed towards the apex, closely and distinctly punctured, the sixth segment more sparingly than the basal ones, the pubescence is depressed and pretty dense, the outstanding black setæ of the sides, apex, and margins of the segments long and numerous. The legs are pitchy-testaceous, the middle and posterior tibiæ each with a distinct exserted seta.

In the male, the ventral plate of the seventh abdominal segment is narrow at the apex and rounded.

In the female, it is broader, furnished with distinct short, black, parallel cilia, and rather broadly and not deeply emarginate in the middle.

In dung, not very abundant. I have never found it in Scotland.

145. *Homalota aterrima.*

Nigra, subopaca, confertim subtilissime punctata, pedibus piceo-testaceis; antennis sat elongatis, articulis haud transversis; thorace transverso, æquali, vel subtiliter canaliculato; abdomine apicem versus angustato, supra dense subtilissime punctato. Long. $1\frac{1}{4}$ lin.

Aleochara aterrima, Grav. Micr. 83; *H. aterrima*, Er. Gen. et Spec. Staph. 133; Kr. Ins. Deutsch. ii. 313; Wat. Cat.; *Acrotona aterrima*, Th. Sk. Col. iii. 36.

A dark-coloured, somewhat broad species, with strongly pointed abdomen, rather long and slender antennæ, and dense and fine punctuation. The antennæ are a little longer than the head and thorax, black, scarcely thickened towards the apex; joints two and three rather elongate, of about equal length, three rather the finer, four distinctly longer than broad, five to ten differing but little from one another in length and breadth, the first of them longer than broad, the last of them about as long as broad; eleventh joint pointed, rather long, as long as the two preceding together. The head is rounded, considerably narrower than the thorax, closely and finely punctured. The thorax is, at the base, nearly as broad as the elytra; its breadth nearly twice its length, the sides rounded, narrower at the anterior than at the posterior angles, closely and finely punctured, delicately and distinctly pubescent, sometimes with a fine central longitudinal channel, sometimes unchannelled. The elytra are black, or brownish-black, about a fourth longer than the thorax, broad, closely and finely punctured. The abdomen is strongly narrowed to the apex, densely, finely, and evenly punctured, sixth segment more sparingly than the basal ones; furnished at the sides and apex with outstanding black setæ. The legs are pitchy-yellow, the femora darker than the tibiæ, the middle and posterior tibiæ furnished near the middle with a distinct outstanding seta, the basal joint of the posterior tarsi but little longer than the second.

Very abundant, all over the country, in various situations.

146. *Homalota pygmæa.*

Nigro-fusca, subopaca, elytris fuscis, antennarum basi pedibusque testaceis, confertim subtilissime punctata; thorace leviter transverso, convexiusculo, æquali; abdomine apicem versus angustato, supra dense subtilissime punctato; tarsis posticis articulo basali elongato. Long. 1 lin.

Aleochara pygmæa, Grav. Micr. 86; *H. pygmæa,* Kr. Ins. Deutsch. ii. 314; Wat. Cat. *Acrotona obfuscata,* Th. Sk. Col. iii. 36. *H. aterrima,* var., Er. Gen. et Spec. Staph. 133.

Var.—Antennarum thoracis elytrorumque colore plus minusve dilutiore.

This species more resembles an *Oxypoda* than does any other of this genus; its punctuation, and the structure of the posterior tarsi, closely imitate the same parts in *Oxypoda*, nevertheless *pygmæa* is a true *Homalota*. The antennæ are moderately long, pitchy-black, two or three basal joints obscurely yellow, a little thickened towards the apex; joints two and three rather long and slender, of about equal length, four to seven each longer than broad, eight to ten about as long as broad; eleventh joint rather long, gently pointed, about as long as the two preceding together. The head is smaller than the thorax, rounded, a little narrowed to the front, blackish, not shining, the palpi obscurely yellowish, closely and very finely punctured, pubescence distinct but very fine. The thorax is, at the base, as broad as the elytra, its breadth about one-third greater than its length, the sides gently rounded and distinctly narrowed towards the front, transversely convex, very finely and closely punctured, and delicately pubescent. The elytra are brownish or obscurely blackish, about a fourth longer than the thorax, densely and finely punctured. The abdomen is strongly pointed at the apex, finely and densely punctured, the apical segments a little more sparingly than the basal ones, the margins of the segments generally, the apex always, more or less distinctly paler, the sides and apex furnished with outstanding black setæ. The legs are yellow, the basal joint of the posterior tarsi as long as, or longer than, the two succeeding ones, the exserted seta of the posterior tibiæ is absent, or rather so small as to escape observation.

Pretty generally distributed in England and Scotland, but not abundant. The light-coloured form seems to be the common one in the South, while the dark form is the only one I have found in Scotland.

Obs.—Thomson considers this species to be the *Aleochara obfuscata* of Gravenhorst, but I agree with Kraatz that it is rather Gravenhorst's *A. pygmæa;* though it is difficult to speak with any certainty, I should consider Gravenhorst's *A. obfuscata* rather applicable to *H. pilosiventris*, Th. In any case, the name *pygmæa* should be adopted, for if the Gravenhorstian names be left out of the question altogether, *H. pygmæa*, Kr., has priority over *H. obfuscata*, Th.

147. *Homalota muscorum.*

Nigra, parum nitida, elytris nigro-fuscis, pedibus testaceis, femoribus obscurioribus, crebre subtiliter punctata; antennis articulis 7-10 leviter transversis; thorace leviter transverso, convexiusculo, æquali; abdomine apicem versus angustato, supra crebre apice vix parcius punctato. Long. 1 lin.

H. muscorum, Bris. Ann. Soc. Ent. Fr. 1860, p. 344. *H. picipes*, Wat. Cat.

Antennæ of moderate length and stoutness, a little thickened towards the apex; joints two and three rather long, two a little longer than three, four moderately stout, four to six about as long as broad, seven to ten each a little shorter than broad; eleventh joint rather long and stout, about as long as the two preceding together. The head is narrower than the thorax, rounded, convex above, finely and moderately closely punctured. The thorax is, at the base, a little narrower than the elytra, its breadth about one-third greater than its length, considerably narrower at the anterior than at the posterior angles, transversely arched, without channel or impression, closely and very finely punctured, and delicately pubescent. The elytra are a little longer than the thorax, of an obscure fuscous or blackish colour, closely and finely punctured. The abdomen is distinctly narrowed towards the apex, finely closely and evenly punctured, the sixth segment a little more sparingly than the preceding ones; the pubescence is long, depressed, and distinct, the outstanding setæ of the sides and apex of moderate length. The legs are yellowish, the femora pitchy, the outstanding setæ of the posterior tibiæ small and indistinct.

Very abundant all over the country.

Obs.—This species is readily distinguished from *H. pygmæa*, by its less elongate form, shorter concolorous antennæ, and shorter basal joint to the posterior tarsi. *H. pilosiventris* is smaller, has a shorter thorax, with a fine channel at the base, shorter antennæ, and smaller head. I have compared my specimens with M. Brisout's type of *H. muscorum*, and find they agree in all respects. Kraatz has stated that *H. muscorum* is identical with *H. stercoraria*, Kr., but I cannot agree that M. Brisout's specimens accord with Kraatz's description of *H. sterco-*

raria. *H. muscorum* can, I think, scarcely be wanting in Germany, and it is possible that it has not been separated by Kraatz from *H. stercoraria*, which would account for the above confusion. It is the *H. picipes* of Mr. Waterhouse's catalogue, but as another name exists, I have not adopted Stephens's, his description being quite valueless.

148. *Homalota pilosiventris*.

Nigra, parum nitida, pedibus piceis, crebre punctata; antennis articulis 4-10 leviter transversis; thorace transverso, convexiusculo, basi leviter canaliculato; abdomine apicem versus fortiter angustato, crebre apice vix parcius punctato. Long. 1 lin.

H. pilosiventris, Th. Öfv. Vet. Ac. Förh. 1856, p. 106; *Acrotona pilosiventris*, Th. Sk. Col. iii. 38. *H. stercoraria*, Kr. Ins. Deutsch. ii. 319.

Antennæ pitchy-black, rather short, moderately stout, slightly thickened towards the apex; joint three short, not quite so long as two, distinctly narrowed towards the base, four to ten a little transverse, four a little broader than three, and five than four, after this but little difference in the length and breadth till the eleventh, which is rather large, about as long as the two preceding. The head is rather small, distinctly narrower than the thorax, much narrower than the elytra, moderately closely and finely punctured. The thorax is a little narrower than the elytra, more than half as broad again as long, distinctly arched transversely, and narrower at the anterior than at the posterior angles, closely and rather finely punctured, always with a longitudinal channel in front of the scutellum, sometimes short, and sometimes extending the whole length of the thorax. The elytra are about a third or fourth longer than the thorax, of a pitchy or pitchy-black colour, moderately closely and distinctly punctured. The abdomen is black, strongly narrowed behind, pretty closely, evenly and densely punctured, the apical segments a little more sparingly than the basal ones; its pubescence is long, depressed and distinct, and the sides and apex are furnished pretty numerously with black, rather rigid, long, outstanding hairs. The legs are pitchy-yellow, the middle and posterior tibiæ furnished, on the outside, just below the knee, with a rather stout distinct outstanding seta.

Not common. I have found it in dung at Thornhill, in the New Forest, and near London.

Obs.—There is, in the British Museum, an insect sent by Kraatz, as *H. stercoraria*; it is in very bad condition, but does not, I think, belong to this species. Nevertheless, I am pretty sure that the species above described is Kraatz's *stercoraria*, as his description is very good, and applies thoroughly, with the exception of the preliminary remarks, about which there appears to be some confusion.

Group XXII. *Abdomen distinctly narrowed towards the apex, thorax distinctly narrowed in front, apical segments of the abdomen sparingly, or not at all punctured.* (Species 149—157).

This group also contains species differing in many respects from one another, but associated in order to facilitate reference. The species apparently all occur among moss and leaves. *H. cribrata* appears to me a species of which the affinities are but little marked; while *H. notha* is one of the most remarkable species of the genus.

149. *Homalota fusca.*

Fusca, sat nitida, antennarum basi pedibusque testaceis, elytris anoque ferrugineis; thorace transverso, canaliculato; abdomine supra segmentis 2-4 crebre, 5° et 6° parcius punctatis. Long. $1\frac{1}{3}$ lin.

Mas; abdomine segmento 7° dorsali apice evidenter 4-dentato.

Aleochara fusca, Sahl. Ins. Fenn. i. 371. *H. vernacula*, Er. Gen. et Spec. Staph. 131; Kr. Ins. Deutsch. ii. 315; *Atheta vernacula*, Th. Sk. Col. iii. 84. *H. laticollis*, Wat. Cat.

Antennæ yellow, more or less infuscate after the third joint, moderately long, a little thickened towards the apex, and furnished with fine exserted hairs; joints two and three moderately long, three a little longer and more slender than two, four smaller than the others, about as long as broad, five to seven each a little longer than broad, eight to ten scarcely so long as broad;

eleventh joint rather stout, gently pointed, scarcely so long as the two preceding together. The head is considerably narrower than the thorax, rather broad and short, black, closely and distinctly punctured, palpi yellowish. The thorax is broad, at the base as broad as the elytra, about twice as broad as long, the sides gently rounded, a little narrower at the anterior than at the posterior angles, of an obscure fuscous colour, a little paler at the sides, closely and distinctly punctured, with a central longitudinal channel, pubescence fine and short, exserted setæ at the sides almost none. The elytra are about a third longer than the thorax, of a yellowish colour, closely and pretty distinctly punctured. The abdomen is distinctly narrowed towards the apex, and is of a blackish colour with the extremity paler, segments two to four closely and rather finely, five and six more sparingly and finely, punctured; the outstanding setæ at the sides not numerous. The legs are yellow, the tibiæ without exserted setæ.

In the male, the hind margin of the dorsal plate of the seventh abdominal segment is furnished with four distinct teeth; they are about equidistant from one another, the external ones rather finer and longer than the inner ones, but the notch between the two inner ones is a little the deeper.

In the female, the hind margin of the seventh segment is simple, both above and below.

Common, both in England and Scotland.

Obs.—It is stated, both by Kraatz and Thomson, that the seventh ventral abdominal plate is emarginate in the female of this species. This, however, I do not find to be the case.

150. *Homalota subsinuata.*

Nigra, parum nitida, elytris nigro-fuscis, pedibus fuscis, ano obscure piceo; capite minore, thorace duplo angustiore; thorace transverso, subtiliter canaliculato, transversim convexiusculo; abdomine apicem versus leviter angustato, supra segmentis 2-4 crebre distinctius, 5° et 6° parcius, punctatis. Long. 1-1¼ lin.

Mas; abdomine segmento 7° ventrali apice rotundato.

Fem.; abdomine segmento 7° ventrali apice medio leviter emarginato.

H. subsinuata, Er. Gen. et Spec. Staph. 125; Kr. Ins. Deutsch. ii. 316. *H. castanipes,* Wat. Cat. *Acrotona fimetaria,* Th. Sk. Col. iii. 37.

This species is distinguished amongst its allies by its small head, the abdomen but little narrowed towards the apex, and strongly and moderately closely punctured. The antennæ are blackish, with the first joint pitchy; moderately short, not stout, a little thickened towards the apex; joints two and three moderately long, of about equal length, four to ten each slightly broader than its predecessor, of the first of them the length differs but little from the breadth, and the last ones are but little shorter than broad; the eleventh joint is rather stout, about as long as the two preceding together. The head is small and rounded, about half as broad as the thorax, finely and moderately closely punctured. The thorax is, at the base, about as broad as the elytra, about half as broad again as long, distinctly narrower at the anterior than at the posterior angles, pretty closely and finely punctured, with a moderately distinct central longitudinal channel, the exserted setæ of the sides indistinct. The elytra are about a fourth longer than the thorax, pitchy-black or blackish, closely, moderately finely, and distinctly punctured. The abdomen is black and shining, narrowed from behind the middle to the apex, which is pitchy; segments two to four are rather closely and distinctly punctured, five and six more finely and sparingly punctured, the pubescence is distinct and rather rough, the outstanding setæ of the sides and apex rather numerous, but not long. The legs are pitchy-yellow; the middle tibiæ each with a short seta in the middle, posterior ones with the setæ undeveloped.

In the male, the ventral plate of the seventh abdominal segment is a little produced in the middle, while in the female it is furnished with distinct black cilia, and rather broadly and not deeply emarginate.

In England and Scotland, but not very common; generally found among moss and dead leaves, in the spring.

151. *Homalota pulchra.*

Nigra, nitidula, antennis thoracis lateribus anoque fuscis, pedibus elytrisque testaceis, his circa scutellum

angulisque apicis infuscatis; thorace transverso; abdomine supra segmentis 2-4 minus crebre, 5° et 6° parcius punctatis. Long. 1¼ lin.

H. pulchra, Kr. Ins. Deutsch. ii. 321; Wat. Cat.

Antennæ rather slender, of a dirty yellowish colour, a little thickened towards the apex; first joint stout, two and three of nearly equal length, four to ten differing but little from one another in length, the first of them longer than broad, the last scarcely so long as broad; eleventh joint about as long as the two preceding together. The head is rather broad, considerably narrower than the thorax, black and shining, indistinctly punctured. The thorax is, at the base, about as broad as the elytra, of a pitchy colour, a little paler at the sides, more than half as broad again as long, a little narrower at the anterior than at the posterior angles, sparingly punctured, with a very indistinct impression at the base in front of the scutellum, with a few short exserted setæ at the sides. The elytra are about a third longer than the thorax, of a shining yellowish colour, with indistinct infuscation about the scutellum and towards the external angles, rather coarsely but shallowly punctured. The abdomen is black and shining, moderately narrowed towards the apex, which is pitchy or yellowish; segments two to four are rather sparingly but distinctly punctured, five and six finely and very sparingly punctured, the outstanding setæ of the sides rather long and distinct. Legs yellow; tibiæ without setæ.

The male is only to be distinguished by the ventral plate of the seventh segment of the abdomen being narrowed, and rather more produced than in the female.

Rare. I have found it at Horning in Norfolk, in the neighbourhood of London, and on the Braid Hills at Edinburgh, in the early spring.

152. *Homalota orbata.*

Nigra, nitida, antennis nigro-fuscis, elytris brunneis, pedibus testaceis; thorace convexiusculo, transverso, parce subtiliter punctato, et tenuissime pubescente; abdomine segmentis 2-4 sat crebre, 5° et 6° parcius punctatis. Long. 1¼ lin.

H. orbata, Er. Käf. Brand. i. 339; Gen. et Spec. Staph. 132; Kr. Ins. Deutsch. ii. 322; Wat. Cat.; *Acrotona orbata*, Th. Sk. Col. iii. 39.

Closely allied to *H. fungi*, but with darker antennæ, rather longer thorax, which is also more delicately punctured and pubescent, and with brownish elytra. The antennæ are blackish or pitchy, pretty distinctly pilose, slightly thickened towards the apex; joints two and three of about equal length, four rather longer than broad, five to seven about as long as broad, eight to ten scarcely transverse; eleventh joint moderately stout, about as long as the two preceding together. The head is rather small, much narrower than the thorax, black and shining, very finely and indistinctly punctured. The thorax is black, the sides sometimes pitchy, as broad as the elytra, about one-half or one-third broader than long, the sides rounded, narrower at the anterior than at the posterior angles, transversely convex, very finely and not closely punctured. The abdomen is black and shining, narrowed towards the apex, which is sometimes paler; segments two to four distinctly and pretty closely punctured, five a little more sparingly, six sparingly punctured; the outstanding setæ of the sides and apex are numerous and distinct. The legs are yellow, the tibiæ without exserted setæ.

The male is only to be distinguished by the ventral plate of the seventh abdominal segment being narrower and longer than in the female.

Rare; and in this country found only in sandy places on the coast. Deal, Weymouth, Aberlady, Arbroath.

153. *Homalota fungi.*

Nigra, sat nitida, antennis pedibusque testaceis; illis sat tenuibus, subtiliter pilosellis, articulis haud transversis; capite thorace multo minore; hoc transverso, convexiusculo, æquali, vel obsolete canaliculato, elytrorum fere longitudinis; abdomine segmentis 2-4 crebre, 5° et 6° parcius punctatis. Long. 1¼ lin.

Var.—H. dubia. Antennis apicem versus subincrassatis, articulo penultimo fere transverso; thorace breviore.

Aleochara fungi, Grav. Mon. 157; *H. fungi*, Er. Gen. et Spec. Staph. 131; Kr. Ins. Deutsch. ii. 321; Wat. Cat.; *Acrotona fungi*, Th. Sk. Col. iii. 38.

An obscurely coloured species, distinctly narrowed both before and behind, and with the thorax largely developed in proportion to the elytra. The antennæ are yellowish, scarcely at all thickened towards the apex, finely but distinctly pilose; joints two and three moderately long, of about equal length, four not so long as five, longer than broad, five to ten differing but little from one another in length or breadth; in the type, the length of each joint is greater than its breadth, while in the var. *dubia*, the penultimate joint is scarcely so long as broad; the eleventh joint is rather long, gently pointed, as long as the two preceding together. The head is small, much narrower than the thorax, rounded, finely and indistinctly punctured; the palpi are dirty yellow. The thorax is as broad as (almost broader than) the elytra, half as broad again as long, transversely convex, the sides rounded, narrower at the anterior than at the posterior angles, finely but not closely punctured, with or without an obscure central longitudinal channel, with a few short, indistinct, exserted setæ at the sides. The elytra are but little longer than the thorax, blackish or pitchy-black, pretty closely and distinctly but shallowly punctured, the apex on each side sinuate at the external angles. The abdomen is black and rather shining; segments two to four distinctly and pretty closely punctured, fifth segment a little more finely and sparingly, sixth segment sparingly punctured; the outstanding setæ of the sides and apex are distinct and numerous. Legs yellow, posterior tibiæ without exserted setæ.

The male is only to be distinguished from the female, by the narrower and more produced apical part of the ventral plate of the seventh abdominal segment.

Very common all over the country, in moss and dead leaves.

Obs.—The var. *dubia* has shorter antennæ and thorax, and on this account, I formerly considered it a variety of *H. clientula*, but in colour and punctuation it agrees better with *H. fungi*. It is more abundant than the type.

154. *Homalota clientula.*

Nigra, sat nitida, antennis pedibusque testaceis, elytris anoque ferrugineis; thorace transverso; abdomine supra segmentis 2-4 crebre, 5° et 6° parcius punctatis. Long. 1 lin.

H. clientula, Er. Gen. et Spec. Staph. 133; Kr. Ins. Deutsch. ii. 322; Wat. Cat.

Very closely allied to *H. fungi,* and probably only a variety of that species; but smaller, not so broad in the middle, the antennæ in proportion to the size somewhat stouter, the punctuation of the thorax and elytra rather closer and finer, and the colour brighter. The sides of the thorax are paler than the centre, the elytra are yellowish or brownish, a little darker about the scutellum, and the extremity of the abdomen is pitchy or yellowish, as are also sometimes the margins of the segments.

Tolerably common, both in England and Scotland.

155. *Homalota orphana.*

Nigra, sat nitida, antennarum basi pedibusque obscure testaceis, elytris nigro-fuscis; thorace fortiter transverso, convexiusculo, æquali; elytris hoc longioribus; abdomine segmentis 2-4 crebre, 5° et 6° parcius punctatis. Long. ¾ lin.

H. orphana, Er. Käf. Brand. i. 340; Gen. et Spec. Staph. 133; Kr. Ins. Deutsch. ii. 323; *Acrotona orphana,* Th. Sk. Col. iii. 39.

Allied to *H. fungi,* but much smaller, and proportionately broader and shorter. The antennæ are pitchy, paler at the base, distinctly thickened towards the apex; joint three nearly as long as two, but more slender, four and five each about as long as broad, the following ones slightly transverse; eleventh joint nearly as long as the two preceding together. The head is rather broad and short, much narrower than the thorax, finely and indistinctly punctured. The thorax is, at the base, about as broad as the elytra, its breadth about twice its length, narrower at the anterior than at the posterior angles, finely and moderately closely punctured. The elytra are about a third or fourth longer than the thorax, closely and distinctly punctured. The abdomen is distinctly narrowed towards the apex, segments two to four closely and distinctly punctured, fifth segment rather more sparingly punctured, sixth segment still more sparingly punctured. Legs pitchy, tibiæ without exserted setæ.

Very rare; single specimens have occurred at Hammersmith Marshes, and elsewhere in the neighbourhood of London.

156. *Homalota cribrata.*

Brevior, nigra, vix nitida, pedibus fusco-testaceis, confertim evidenter punctata; capite thorace multo minore, hoc transverso; abdomine apicem versus attenuato, supra segmentis 2-4 crebre subtiliter, 5° et 6° sat parce punctatis. Long. $\frac{2}{3}$ lin.

H. cribrata, Kr. Ins. Deutsch. ii. 288.

A small species, distinguished by its short broad form, with comparatively strong punctuation; narrowed both before and behind. The antennæ are pitchy-black, rather short, not stout, distinctly thickened towards the apex; joint two is stout, much longer and stouter than three, four to ten each a little stouter than its predecessor, four about as broad as three, nearly as long as broad, five slightly transverse, ten distinctly so; the eleventh joint is rather short, pointed, about as long as the two preceding. The head is rather broad in proportion to its length, much narrower than the thorax, only half the width of the elytra, closely, regularly, and distinctly punctured, pubescence scarcely visible. The thorax is a little narrower than the elytra, its breadth nearly twice its length, the sides gently rounded, the base more distinctly so, a little narrower at the anterior than at the posterior angles, closely and finely but distinctly punctured, the pubescence short and indistinct. The elytra are pitchy-black, a third or fourth longer than the thorax, closely and distinctly punctured, the punctuation being rather rugulose, their pubescence more distinct than that of the head and thorax. The abdomen is broad, distinctly narrowed to the apex; segments two to four are closely finely and distinctly punctured, fifth segment rather more sparingly, sixth sparingly, punctured. Legs pitchy-yellow.

I have seen only two or three specimens of this species, one of which I captured myself near Croydon.

Obs.—I have identified *H. cribrata* only by description, it being apparently as rare abroad as in this country. Kraatz remarks, that among the Erichsonian specimens

of *H. inconspicua* are two of this species; the punctuation of the head certainly resembles that of *H. inconspicua*, but the sculpture of the elytra is very different. The position of the species in the genus is not very easy to determine.

157. *Homalota notha.*

Brevissima, fusca, antennarum basi pedibusque rufis, distincte pubescens; thorace brevi, elytris hujus longitudinis; abdomine lateribus fere rotundatis, supra parce et obsolete punctato. Long. 1 lin.

Mas; elytris angulo suturali tuberculo elevato instructo; abdomine segmento 7° dorsali apice medio anguste emarginato.

H. notha, Er. Gen. et Spec. Staph. 126; Kr. Ins. Deutsch. ii. 323.

The most discordant species of the genus; very broad and short, and having the appearance of a *Gyrophæna* as much as of a *Homalota*. The antennæ are moderately long, distinctly pilose, thickened towards the apex, the basal joints reddish, the apical ones infuscate; joint three finer and a little shorter than two, four also slender, longer than broad, five about as long as broad, the following ones transverse, the tenth distinctly transverse; eleventh joint short, stout and pointed, about twice as long as the tenth. The head is broad, but much narrower than the thorax, black and shining, indistinctly but not altogether finely punctured. The thorax is nearly as broad as the elytra, very short, more than twice as broad as long, transversely convex, narrower at the anterior than at the posterior angles, finely and indistinctly punctured, with rather long, distinct, somewhat scanty pubescence. The elytra are about as long as the thorax, pretty closely and distinctly punctured, pubescence distinct and rather long, the sides with a few distinct outstanding setæ. The abdomen is flat above, dilated and convex beneath, the sides rounded and furnished with outstanding setæ, the margins of the segments finely and indistinctly punctured and pubescent. The legs are reddish-yellow, the tarsi rather stout.

In the male, each elytron is furnished at the apex, close to the suture, with a distinct elevated tubercle; the apex of the dorsal plate of the seventh segment of the abdomen has a notch in the middle, and the hind margin projects somewhat on each side of the notch.

Found, very rarely, by Mr. Brewer, on grassy banks, at the sides of the Medway, near Chatham.

Obs.—I have seen this species alive, and find that it not only simulates a *Gyrophæna* in appearance, but that the abdomen is doubled up over the head when the insect walks about, exactly as in *Encephalus complicans*.

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OCT. 1, 1883.

XV. *Descriptions of new or little known forms of Diurnal* Lepidoptera. By Arthur G. Butler, F.L.S., &c.

[Read 3rd May, 1869.]

Argynnis Aglaia, Linn., aberr. (Pl. V. figs. 2, 3.)

♀. Differt supra a formâ communi maculis externis alarum anticarum obsoletis, venis ad marginem externum nigro-dilatatis, disco et area basali posticarum nigris, annulis autem quatuor discalibus margine externo subparallelis fulvis; margine externo late fulvo, immaculato, a venis nigro-dilatatis disrupto. Subtus characteribus basalibus anticarum confusis nigro innatis, punctis sex discalibus transversis serie undata, area apicali flavido-olivacea ad angulum ani fulvescente, striis duabus apud apicem argenteis; posticis olivaceis, area basali omnino argentea, a venis olivaceis interrupta, maculis discalibus partim obscuratis, plagis septem magnis a venis separatis argenteis diffusis, margine externo pallido, immaculato.

Hab.—Helvetia (Chamouny). Coll. mihi.

This very interesting specimen was exhibited at a recent meeting of the Entomological Society (Proc. Ent. Soc. 1869, p. viii); Mr. McLachlan informs me that the same form exists in the collection of Mr. Bond, but as it seems never to have been described or figured, it is high time that some notice should be taken of it. I caught the insect on a slope facing the Mt. Blanc range, where it was flying about in company with male specimens of *Aglaia* and *Niobe*; these two forms are constantly together, vary into one another, chase one another about, and show every sign of being one and the same species.

Charaxes Etesipe, Godart. (Pl. V. figs. 5, 6, ♂.)

♂ *Nymphalis Etheta*, Godart, Enc. Méth. ix. p. 356 (1819); Griffith's An. Kingd. Ins. Lep. pl. 2, fig. 4.

♀ *Papilio Etheocles*, Drury (*nec* Fabr.) Ill. 3, pl. 10 (1800).

♀ *Nymphalis Etesipe*, Godart, Enc. Méth. ix. p. 355 (1819).

Hab.—Sierra Leone. ♂, Coll. Swanzy.

The sexes of this species have hitherto been kept separate, probably on account of the rarity of the insect, and the exceedingly poor figure of the male in Guérin's Iconographie (copied in Griffith's Animal Kingdom); in this figure, the tails are much too stout and clumsy, the entire build of the insect is incorrect, the colouring underdone, and only the uppersurface is represented; a moderately fine example lately received by Mr. Swanzy from Sierra Leone, has given me an opportunity of correcting this error.

Godart describes *Etheta* as follows:—

"Nym. alis suprà atro-cæruleis, dimidio apicali cærulescenti-maculatis: subtus albis, nigro ferrugineoque marmoratis.

"It differs from *Etesipe* in that it is smaller, and the uppersurface of the wings exhibits towards the margin two transverse rows of pale blue spots; the hind-wings, moreover, in that the white discoidal band is altogether wanting; only the uppersurface of the front wings is marked with some white spots between the disc and the centre of the costa. From the West Coast of Africa.

"N.B. Might not this be the male of *Etesipe?*"

The natural position of *Etesipe* is evidently between *C. Jocaste*,* Butler, and *C. Tiridates*, Fabricius, the undersurface being most like the former, the uppersurface more closely resembling the latter species.

Apatura Zalmunna, sp. nov. (Pl. V. fig. 4.)

♂. Alæ supra nigro-fuscæ, striolis nonnullis anticarum discoidalibus inconspicuis pallidis, punctis tribus albidis subapicalibus serie angulata positis, striolaque submarginali in alis ambabus pallide brunnea; corpus nigro-fuscum. Subtus, alæ anticæ area basali fulva, apicali nigro-fusca; apice plaga squamosa glaucescente; macula discoidea, altera striolari pone cellam, maculisque discalibus duodecim hic illuc positis, albidis; posticæ glaucescentes, lineis tribus obscurioribus et albo fulvoque variæ; corpus luteo-albidum. Exp. alar. unc. $2\frac{3}{16}$.

Hab.—Brazilia. Brit. Mus.

Presented to the Collection by General Hardwicke.

* Felder's *C. Achæmenes* is the male of *C. Jocaste;* my sectional description taken in connection with the locality, sufficiently characterized the insect, so that Felder's name must sink into a synonym.

Papilio Merope, Cramer. (Pl. V. fig. 1.)

♀ *P. Cenea*, var., Stoll, Suppl. Cramer, pl. 29, figs. 1, 1*a* (1779).

Hab.—Graham's Town. Coll. Higgins.

This variety, kindly lent to me by Mr. Higgins, is chiefly interesting as being a connecting link between the two forms of *P. Cenea* figured in Mr. Trimen's paper, lately published in the Transactions of the Linnean Society (vol. xxvi, p. 497, pl. 43, figs. 3, 4); it also to a certain extent explains the modification of *Cenea* into *Hippocoon* (which is apparently one of the most difficult colour transitions accomplished by this species) inasmuch as it is almost intermediate between *Cenea* and the variety of *Hippocoon*, represented at fig. 2 of Mr. Trimen's plate, the pattern, but not the colouring, of the hindwings being the same with that of the latter form.

I cannot quite agree with all Mr. Trimen's conclusions respecting *P. Merope*, for it seems to me, that though we have every evidence that all the forms of this type now existing have been modified from one original species, until we can show a series of transitional varieties uniting them all together, we shall be obliged to consider some of them at least as distinct local species; the Western form indeed is so different even in the male sex from its Southern representative, that it can be at once distinguished; the same sex also differs a little from less distant localities, although not at all to the same extent that the female does, yet, since amount of difference does not constitute a species, the slightest constant character is of importance.

The forms of the *Merope* group in the Collection of the British Museum are as under—

(1). *Papilio Merope.*

(a.) *Cenea.*

♂. Alæ anticæ macula subapicali elongata velut in feminâ, margine externo distinctè undato; margine costali nigro paululum in cellam errante: posticæ cauda partim nigra; subtus fundo basali albido, apicali ochreo.

♀ *Cenea*, Stoll, Suppl. Cramer, pl. 29, fig. 1 (1791).

♂, ♀, Zoolu Country. Presented by G. F. Angas, Esq., and Sir Andrew Smith.

(a. a.) *Cenea*, var.

♂ Alæ anticæ margine externo dentato-sinuato, macula subapicali minore; posticæ fascia lata discali nigra aliquando interrupta; subtus fundo obscuriore ochraceo.

♀ *Cenea*, var., maculis anticarum albis. Trimen in Trans. Linn. Soc. xxvi. tab. 43, fig. 4 (1869).

♂, ♀, Port Natal. Obtained 1858. Collected by Mr. Gueinzius.

(b.) *Merope* (true).

♂ *Merope*, Cramer, Pap. Exot. ii. pl. 151, figs. A, B (1779).

♀ *Trophonius*, Westwood, Arcana Entom. pl. 39, figs. 1, 2.

♂ Knysna. Presented 1859, by R. Trimen, Esq.; ♀ from Mr. Milne's Collection.

The typical *Merope*, excepting in form, is on the upper-surface much like the male of *Meriones*, but the tails of the hind-wings are uniformly of a pale ochre colour; the undersurface of the hind-wings is also paler than in the other Southern males.

(2). *Papilio Brutus.*

(a.) *Brutus.*

♂ *Brutus*, Fabricius, Sp. Ins. p. 13 (1781).

♀ *Hippocoon*, Fabricius, Ent. Syst. iii. p. 38 (1793).

Sierra Leone. ♂ presented by the Rev. D. F. Morgan; ♀ collected 1858, by Mr. James Foxcroft.

The male of this form, which agrees with the *Sulfureus* (*sic*) of Palisot de Beauvois, differs from Cramer's *Merope* in its greater length of wing, and the very pale colouring of the undersurface of the hind-wings.

(b.) *Niavius.*

♂ *Bruto* similis at major, margine quoque anticarum externo multo latiore.

♀ *Niavius*, Cram. Pap. Exot. iii. pl. 234, fig. A (1782).

Ashanti. ♂ from Mr. Stothard's collection; ♀ obtained 1844, from the collection of the Wesleyan Missionary Society.

This is also the *Niavius* of Palisot de Beauvois; it may be at once distinguished from *Hippocoon* by its much greater size, and more elongate wings; the Ashanti forms of *Danais Niavius* and of *Diadema Anthedon* differ from the Sierra Leone forms in the same particulars.

XVI. *Notes on Eastern Butterflies (continued).* By Alfred R. Wallace, F.Z.S., V.-P. Ent. Soc., &c.

[Read 3rd May, 1869.]

Genus Diadema.

In Doubleday, Westwood, and Hewitson's Genera of Diurnal *Lepidoptera* this genus included six or seven others, which were most of them characterized and named as subgenera, or sections. These are now generally considered as distinct genera, since they offer remarkable structural differences, and mostly inhabit distinct geographical regions. The genus thus restricted will contain eighteen species, only two of which do not inhabit the Malay Archipelago. One of these, *Diadema Salmacis*, is found in Africa, and a beautiful new one, apparently allied to it (*Diadema Dexithea*) has been described by Mr. Hewitson, from Madagascar. Two of the commonest species, *Diadema Bolina*, L. (*Auge*, Cr.) and *D. Misippus*, L. (*Bolina*, Cr.), have an immense range, from Australia and the Pacific to India and Africa, but no other species of the restricted genus is found in continental India, and all but two are inhabitants of the Austro-Malayan region, which we may therefore look upon as the probable birth-place of the group, as indicated by the following table :—

Diadema.	Africa.	India.	Indo-Malay Region.	Austro-Malay Region.
2 Species . .	2	-	-	-
2 Species .	2	2	2	2
1 Species . .	-	-	1	-
13 Species .	-	-	-	13
Total 18 Species . .	4	2	3	15

It is remarkable that the African *D. Salmacis* should most resemble in its colouration and general appearance a species inhabiting Celebes, *D. Diomea ;* one of the little group of facts which point to some unknown mode of connection in former times between these remote portions of the earth.

This genus, and those which have been separated from it, furnish us with examples of almost all the anomalies of variation. Some species present an amount of variation perhaps greater than any to be found among butterflies; others scarcely vary at all. The sexes are, in some species, absolutely without a feature of their colouration in common; in others they are hardly distinguishable. In a large number of species there is the most wonderful mimicry of other groups, so that they have been mistaken for *Danaidæ* and *Acræidæ*, and there is, perhaps, nothing more striking than the accurate manner in which some African species imitate the striped and spotted *Acrææ*, which inhabit the very same districts. In the Eastern islands the protective mimicry has sometimes caused the usual sexual characters to be completely reversed, which has led to confusion in the determination of the species.

Papilio Vitellia, figured by Cramer, has been usually placed in this genus, but specimens collected by myself in the original locality, Amboyna, show it to be a species of *Elymnias*.

DIADEMA, Boisduval.

1. Diadema Bolina.

♂. *Papilio Bolina*, Linn. Mus. Lud. Ulr. Reg. p. 295; Syst. Nat. ii. 781. Clerck, Icon. t. 21.

♂. *Papilio Auge*, Cram. 190, A. B.

♂. *Papilio Lasinassa*, Cram. 205, A. B.; Fabr. Ent. Syst. iii. pt. i. p. 127.

♀. *Papilio Iphigenia*, Cram. 67, D. E.

Cramer figures as distinct species eight varieties of the female, and many others exist in collections. I do not repeat the references to all these, which are to be found in the "Genera of Diurnal Lepidoptera," Moore's "Catalogue of the East Indian Museum," and other works. I would remark, however, that *Porphyria* and *Velleda* of Cramer, usually placed with this species, seem to me to be females of *Diadema Alimena*.

Hab.—Every island in the Archipelago, as well as India, Australia, and the Pacific Islands. (S. Africa?).

Mr. Butler has pointed out to me, that Clerck's figure, the only one quoted by Linnæus, undoubtedly represents

the same insect as that which has hitherto been termed *Auge* or *Lasinassa*, with which the detailed description in Mus. Ludovicæ Ulricæ perfectly agrees, while it will not at all apply to the *Bolina* of Cramer. This error originated with Cramer, who quotes Linnæus and Clerck for his *Papilio Bolina*, which is a different insect, to which it will now be necessary to apply the name of *Misippus*, given to the female by Linnæus. Cramer's mistake has been unfortunately adopted by all succeeding authors, who seem never to have compared the two insects with the original description and figure. The alteration at this late period will, therefore, cause much confusion, but unless the law of priority is abandoned, no other course is open to me.

This is an exceedingly wide-spread and variable species. The male is tolerably constant, but presents three decided modifications. That which extends over the whole continent of India, is generally distinguished by a row of white points behind the blue and white spot on the hind-wing, and the white bands across the wings on the underside are well marked. Those of the Malayan and Polynesian countries never have the white dots, and seldom have the bands beneath so distinctly marked. Clerck's figure closely resembles an Indian specimen without the white dots. Cramer's figures represent the two most common Malayan forms of the male insect. *Papilio Auge* is the most abundant, and with it are associated females of the type of his *P. Iphigenia*. *Papilio Lasinassa* is a larger insect, in which the blue gloss completely covers the white spots, the margins are less deeply scallopped and less distinctly spotted with white, while on the underside the white transverse bands are nearly or quite absent, and the submarginal lunules are larger, deeper, and placed closer to the submarginal line. The large dusky and yellow-banded females, such as *P. Manlia*, *P. Eriphile*, &c., seem to belong to this form, which is most commonly met with in the Moluccas and the Pacific Islands. The most common females of the Indian form (*P. Perimele*, Cram. 67, B.) are also very distinct looking insects. In the British Museum are some remarkable specimens from the Philippine Islands, in which the male has the spot on the hind-wings reduced to a mere blue gloss without any paler centre, so that in most lights it is invisible; but without a large series

from this locality, it would be impossible to determine how far this is linked to the more ordinary forms by intermediate types. We seem, therefore, to have here a species partly separated into several tolerably distinct forms or races, which only require to be isolated by changes of land and sea to become well-marked species. It may also be remarked, that although the sexes are generally strikingly different, there are individuals whose sex it is impossible to determine without an examination of their structural characters, and which form a complete gradation from one to the other. If any Entomologist would devote himself to the study of this species, by collecting every possible variety of form from every locality in which it is found, it would alone furnish materials for a most instructive essay, which might go far towards elucidating the process of the formation of species.

2. Diadema Misippus.

♀. *Papilio Misippus*, Linn. Syst. Nat. ii. 767.
♀. *Papilio Diocippus*, Cram. 28, B. C.; Fabr. Ent. Syst. iii. pt. i. p. 51.
♀. *Papilio Inaria*, Cram. 214, A. B.
♂. *Papilio Bolina*, Cram. 65, E. F. (*nec* Linn.).

Hab.—Java, Borneo, Lombock, Timor, Celebes, India, China, Formosa, Australia, Africa.

This species is remarkable for the striking contrast of the sexes: the female resembles *Danais Chrysippus*, in company with which I have often taken it flying, when the two were indistinguishable. Specimens occasionally show a slight approach of the sexes to each other, and in the British Museum is a hermaphrodite, one side of which is male, and the other female. The form *Inaria*, which seems common in Africa, is rare in the East, where there is no *Danais* it resembles.

3. Diadema Alimena.

♂. *Papilio Alimena*, Linn. Syst. Nat. ii. 780; Clerck, Ic. pl. 32, f. 1; Cramer, 221, A. B. C.
♀. *Papilio Porphyria*, Cramer, 255, E. F.
♀. *Papilio Velleda*, Cramer, 349, C. D.

Hab.—Bouru, Amboyna, Ceram, Goram, Ké Islands, Waigiou, New Guinea. (Wallace).

This species varies much, and the sexes generally differ greatly, but there are intermediate forms which connect the whole into an unbroken series. *P. Porphyria* and *P. Velleda* of Cramer, have usually been placed with *Diadema Lasinassa*, but they agree very closely with some of my specimens of this species.

4. Diadema Polymena.

Diadema Polymena, Felder, Novara Voyage, Lepidop. p. 414, pl. lv. figs. 5, 6.

Hab.—Aru Islands (Felder).

This is an extreme form of *Diadema Alimena*, the female assuming the white colour which characterizes many butterflies of different genera in the islands south-east of Ceram.

5. Diadema Pandarus.

♂. *Papilio Pandarus*, Linn. Syst. Nat. ii. 767; Esper, Ausl. Schmett. pl. 40, f. 1.

Papilio Callisto, Cramer, 24, A. B.

♀. *Papilio Pipleis*, Linn. Syst. Nat. ii. 775; Cramer, 60, A. B.

Hab.—Amboyna, Ceram (Wallace).

The female has the band across the upper wings either creamy white or pale rufous; the former appearing to be characteristic of Amboyna, the latter of Ceram.

6. Diadema Pandora, n. s.

Female. Wings rather more elongate than in *D. Pandarus*, the posterior margin more deeply scallopped.

Above; the band on the anterior wings replaced by four spots, the lower and upper of which are small, the two middle larger, white, tinged with ashy violet; the row of white spots parallel to the margin smaller and of a subquadrate form; the submarginal lunules nearly half-square instead of triangular. Posterior wings with the black spots almost circular, the pupils almost obsolete.

Beneath; the upper part of the transverse band almost obsolete, the costal margin from its extremity to the apex, whitish; the third and fourth spots from the outer angle of the anterior wings much smaller than the rest; other differences as above. Rather smaller than the females of *D. Pandarus*.

Hab.—Bouru (Wallace).

If we are to discriminate local forms with a view to the investigation of their true place in nature, such slight but definite modifications as this insect presents must be recognized by giving it a distinct specific name.

7. Diadema Saundersi, n. s.

Male. Form and size of *D. Pandarus*.

Above; black, richly glossed with blue in some places; anterior wings with a transverse white band, as in *D. Hewitsoni*, but broader, edged with violet and with a faint violet gloss, the lower spot of this band small and detached; the rufous-orange band as in *D. Hewitsoni*, but broader, more richly coloured, and continued on to the anterior wings so as almost to meet the white band; the row of black spots larger and more regular, but not pupillate; the submarginal row of blue marks wanting.

Beneath; differs from *D. Hewitsoni* by the shorter and whiter transverse band, and the rufous patch with two black pupillate spots at the outer angle of the anterior wings; on the posterior wings there is a whitish patch near the base, and the row of pupillate spots are only edged with rufous, and are placed on a dusky ground, bounded above and below by a wavy white line.

Hab.—Timor (Coll. Wallace, B. M.).

This fine species is intermediate between *D. Pandarus* and *D. Hewitsoni*.

8. Diadema Hewitsoni.

Diadema Pandarus, var., Hewitson, Proc. Zool. Soc. 1858, p. 464, pl. liv. f. 1, 2. (♂. ♀).

The underside of these insects corresponds closely with the upper side, as figured by Mr. Hewitson.

Hab.—Ké Islands (Wallace).

This beautiful species is strikingly distinct. Mr. Hewitson seems to have been led to class it as a variety of *Pandarus* from the analogy of *D. Lasinassa*, which is known to vary enormously; but there are these important differences between the two cases, that many of the most striking modifications of *D. Lasinassa* occur together on the same spot, that they are connected by innumerable intermediate forms, and that almost all these variations occur in the female, while the male hardly varies at all. *D. Pandarus*, on the contrary, is strikingly constant in Amboyna and Ceram, where alone it is found, each of the allied forms seems to be equally constant in its own locality, there are no intermediate connecting links, and the males vary quite as much as the females. I have, therefore, no hesitation in naming this as a very distinct species.

9. Diadema octocula.

Diadema octocula, Butler, Ann. and Mag. Nat. Hist. 1869 (Jan.), pl. ix. f. 1, ♂.

Hab.—Tologa Island (?, perhaps Gilolo). (Coll. Druce).

10. Diadema Tydea.

Diadema Tydea, Felder, Novara Voyage, Lepidop. p. 415, pl. lv. f. 1, 2 (♂), 3, 4 (♀).

Hab.—New Guinea, Waigiou, Batchian (Wallace), Gilolo (Lorquin).

My specimen from New Guinea has the small blue spot on the hind-wings expanded into an oval white patch, almost as in *D. Deois*, and the orange-rufous band broader; the female has the white bands more distinct, and the ocellate spots on the hind-wings smaller. The specimens from Waigiou are intermediate, and as there are other islands between Waigiou and Gilolo, I am inclined to think that a complete gradation of forms will be found.

11. Diadema Deois.

Diadema Deois, Hewitson, Proc. Zool. Soc. 1868, p. 464, pl. liv. f. 3, 4, 5.

Hab.—Aru Islands.

This must be considered as an extreme form of the New Guinea type of *D. Tydea*, from which, however, it differs in the shape of the anterior wing, as well as in markings. The females of this species and of *D. Hewitsoni* have a great resemblance to some of the forms of *Melanitis Melane*, Hewits., which inhabits the same islands.

12. Diadema Diomea.

Diadema Diomea, Hewitson, Proc. Zool. Soc. 1861, p. 51, pl. viii. f. 2 (♂).

Hab.—Menado, Celebes (Wallace).

The female differs only in having the bands broader and whiter, and the submarginal spots on the hind-wings more distinct.

13. Diadema fraterna, n. s.

Male: very near *D. Diomea*, rather smaller; upper-wings less elongate, and the outer margin straighter.

Above; the bands are smaller, and completely covered with a violet blue gloss, costal margin entirely black, band of hind-wings of four spots only.

Beneath; has a large oval white spot above the origin of the first branch of the subcostal vein, which is entirely absent from both sexes of *D. Diomea*.

Hab.—Macassar, Celebes (Wallace).

This insect is certainly very close to *D. Diomea*, but it differs decidedly in the form of the wings, as well as in several characteristic markings. Many species, both of birds and insects, are found exclusively in the North or South of Celebes, but very rarely do they possess representative species. One such case, however, occurs in birds, and with that now noticed, would seem to indicate that the extreme points of this strangely shaped island, have formed two or more distinct islands, at a not very remote epoch.

14. Diadema antilope.

♀. *Papilio antilope*, Cramer, 183, E. F.; *Nymphalis antilope*, Godart, Enc. Méth. ix. 397.

Male: smaller. *Above;* light olive-brown, with a large

apical patch on the anterior wings, a little paler, and a broad submarginal band on the hind-wings nearly white. *Beneath;* as in the female, but paler.

Hab.—Amboyna, Ceram, Bouru. (Wallace).

Prof. Westwood supposed a glossy-blue insect from Java, of exactly the same form as the above, to be the male of Cramer's *Antilope,* and he is followed by Mr. Moore in the Catalogue of the *Lepidoptera* of the East India Company. I have ascertained, however, that these are females, and constitute one or more distinct species, peculiar to the western part of the Archipelago.

15. Diadema anomala.

Diadema Perimele, ♂, Felder, Wien. Ent. Monats. iv. 102 (*nec* Cram.).

♀. *Diadema antilope,* ♂, Westw. Gen. Diurn. Lep. p. 281 (note); Moore, Cat. Lep. Mus. E. I. Comp. p. 160.

Male. Form of *D. Antilope,* rather smaller.

Above; bronzy or olive-brown, with a blue gloss on the costal and outer margins of the anterior wings, and the outer part of the hind-wings paler. A row of white round spots parallel to the outer margin as in *D. Antilope,* but larger and more distinct; a band of three white or bluish-white marks, sometimes very indistinct, across the anterior wings beyond the middle; marginal and submarginal spots as in *D. Antilope. Beneath;* olive-brown, spots and markings as above, with one additional white spot on the costal margin.

Female. Above; rich purple-brown, the whole surface of the upper-wings, except the basal third, richly glossed with satiny blue, a transverse band of three blueish elongate spots beyond the cell, and a fourth much smaller; the two white spots of the intra-marginal band nearest the costa large and confluent, while those nearest the anal angle are small and indistinct. *Beneath;* as in the male.

Hab.—Malacca (♂); Java (♀) (Wallace).

Local form.

Male. Like *D. anomala,* but the two apical white spots are larger, and there is a broad submarginal whitish band on the hind wings, not reaching the outer angle.

Female. Rather larger than *D. anomala*, the transverse band of blue spots wanting, the intra-marginal spots smaller near the apex, and more incurved towards the end of the cell; on the hind-wings a broad brownish band behind, and the marginal and submarginal spots much more distinct. *Beneath;* there is in both sexes a whitish submarginal band on the hind-wings, of which there is hardly any trace in *D. anomala.*

Hab.—Macassar ♂, Menado ♀ (Celebes).

Two females in the British Museum, said to be from Java, differ from mine in having the apex of the wings rather more angular, and in the upperside being nearly uniformly glossed, as in my Bornean form. A male, without locality, agrees closely with my Malacca specimen, but has the white spots and lines more developed on the disc and apex of the upper-wings. A male from Borneo in the British Museum approaches the colouring of the female, being darker than my Malacca male, and having a brighter blue gloss on the outer margin, and apical third of the anterior wings. Two other males, marked "India," closely resemble my Bornean male, but have the apical white spots much less distinctly marked. One of these has much more blue gloss on the outer margin of the anterior wings than the other. We thus find, that there is a great amount of variation in this species, but have not sufficient materials to determine whether there are any fixed local forms.

Felder has described this insect as *Papilio Perimele*, Cramer, and I was for some time disposed to agree with him, but a more careful comparison of the figure with my specimens has convinced me that Cramer's figure represents a female form of his *Papilio Lasinassa*, and that the present insect must have another name bestowed upon it. Cramer's figure differs from *D. anomala* in the following particulars:—1. The wings are shorter and broader, and the upper-wings less falcate. 2. The blue gloss on the anterior wings is not represented in the figure, and the blue spots there shown are not found in *D. anomala.* 3. The submarginal spots on the anterior wings are entirely absent from the figure. 4. The spots on the hind-wings do not decrease towards the anal angle, but are of equal size in the figure. 5. On the under-surface *D. anomala* has two white spots below the costal vein, the figure has only one. 6. There are two spots, one

above the other, at the anal angle in Cramer's figure, but only one in all the specimens of *D. anomala*. Now in all these points in which the figure differs from *D. anomala*, it agrees pretty closely with some of the female forms of *D. Lasinassa*, to which I have little doubt it belongs.

Diadema anomala offers the most remarkable case known among butterflies of a reversal of the usual sexual colouring, the males being always dull brown, the females glossed with rich blue. The reason for this exception to the ordinary rule is, I believe, to be found in the fact that the brilliant blue gloss causes the female to resemble or mimic the *Euplœa Midamus*, one of the very commonest butterflies of the East, and one that belongs to the pre-eminently protected group of the *Danaidæ*. The two insects frequent the same places, and the resemblance on the wing was such as to deceive myself, and it is perhaps owing to this cause that I captured so few specimens of this interesting butterfly. That protection which female insects usually obtain by being less brilliant and conspicuous than the males, is here given by exactly opposite means; a remarkable proof, as it appears to me, that female butterflies would be more generally brilliant than they are, were not their variations in this direction checked, and eliminated by the danger they incur through it. It may be observed, that in the allied species *Diadema Antilope*, the female resembles *Euplœa Climena* (a common species in the countries it inhabits) much more than the male does. It also closely resembles *Elymnias Vitellia*, a species which has long figured in our lists as a *Diadema;* and there is reason to believe that the *Eurytelidæ*, to which *Elymnias* belongs, are themselves a protected group, though perhaps not so perfectly so as the *Danaidæ*.

I exhibited this species at the British Association in 1866, as a remarkable illustration of "mimicry," and afterwards at a meeting of this Society; and I should have described the species before, had I not for a long time considered with Felder, that it was a form of *Perimele*.

16. Diadema albula, n. s.

Form of *D. anomala*, rather smaller.

Male. Above; rusty brown, the markings as in *D.*

anomala, but whiter and more diffused, the spots at the apex confluent, and forming a white spot; a broad white band covering the outer part of the hind-wings. *Beneath;* nearly as above; four whitish linear spots forming a transverse band across the upper-wings, the white band on the hind-wings broader than above, the costal spot larger than in *D. anomala*.

Female. Darker than the male, and of a richer purplish rusty brown. *Above;* spots and bands as in the male, but the transverse band of longitudinal spots bluish, and produced almost to the white intra-marginal spots.

Beneath; as in the male, but rather paler.

Hab.—Timor.

This is an extreme form of *D. anomala;* the female is the most richly coloured, and seems to mimic *Euplœa Bandinii*, and an undescribed species allied to *E. Eurypon*, both of which inhabit the same island.

XVII. *Descriptions of new Species of the Genus* Pison; *and a Synonymic List of those previously described.* By Frederick Smith, V.-P. and late Pres. Ent. Soc.

[Read 7th June, 1869.]

In the year 1837, Shuckard published an excellent paper in the second volume of the Transactions of the Society (p. 73) on this genus of fossorial insects; at that time he could only refer to two species that had been previously described; to these he added seven, and as three of these were not in his own collection, we may conclude that thirty-two years ago, nine species only were to be found in the Collections of British Entomologists. These species were placed in two divisions, in consequence of some difference observable in the neuration of the wings; for the second division he proposed the name of *Pisonitus*, and this name I have used generically, and have added two species to those placed in that division by Shuckard. To the genus *Pison* I have added twenty-five species, thirteen of which are described in the present paper. A third division of these insects I have included in a new genus, *Parapison*, and have described three species. Thus, the nine species included in Shuckard's monograph, and forming his genus *Pison*, will now be increased to forty-three.

Nothing has been published on the habits of these insects that I am aware of, but a paper by Mr. Horne will shortly be read at the Zoological Society in which an ample history of them will appear; I can only here state that these insects are nest-builders, and that they construct cells similar to those of *Pemphredon*, and store them with spiders for their young.

Fam. NYSSONIDÆ, Leach.

Genus Pison, Jurine.

1. *Pison ater*, Spinola.
   Alyson ater, Spin. Ins. Ligur. ii. 253; *Pison ater*, Shuck. Trans. Ent. Soc. ii. 75. ♀.
   Pison Jurinii, Spin. Ins. Ligur. ii. 256.
   Tachybulus niger, Latr. Gen. Crust. et Ins. iv. 75.

Hab.—Europe. In F. Smith's collection.

2. *Pison punctifrons,* Shuck. Trans. Ent. Soc. ii. 77. ♀.

Hab.—India, or St. Helena. In the British Museum.

3. *Pison regalis,* Smith, Trans. Ent. Soc. New Series, ii. 34, pl. viii. fig. 9. ♀.

Hab.—China. In the British Museum.

4. *Pison xanthopus,* Brullé.

Nephridia xanthopus, Brullé, Ann. Soc. Ent. Fr. ii. 403; *Pison xanthopus,* Shuck. Tr. Ent. Soc. ii. 75.

Pison obscurus, Shuck. *l. c.*

Hab.—Cape of Good Hope. In F. Smith's collection.

5. *Pison Spinolæ,* Shuck. Trans. Ent. Soc. ii. 76, ♀; Sauss. Reise der Novara, Zool. Hym. 66.

P. australis, Sauss. Mém. Soc. Phys. Genève, xiv. 11.

Pison tasmanicus, Smith, Cat. Hym. Ins. pt. iv. p. 316, ♂.

Hab.—Sydney and Tasmania. In the British Museum.

6. *Pison auratus,* Shuck. Trans. Ent. Soc. ii. 78. ♀.

Hab.—Australia. (Not C. G. Hope, *vide* Shuckard's Monograph.) In the British Museum.

7. *Pison marginatus,* Smith, Cat. Hym. Ins. pt. iv. p. 314. ♀.

Hab.—Australia (Hunter River). In the British Museum.

8. *Pison perplexus,* Smith, Cat. Hym. Ins. pt. iv. p. 314. ♂.

Hab.—Australia. In the British Museum.

9. *Pison vestitus,* Smith, Cat. Hym. Ins. pt. iv. p. 315. ♀.

Hab.—Australia. In the British Museum.

10. *Pison Westwoodii,* Shuck. Trans. Ent. Soc. ii. 77. ♀.

Hab.—Tasmania. In F. Smith's collection.

11. *Pison obliquus,* Smith, Cat. Hym. Ins. pt. iv. p. 316. ♀.

Hab.—Tasmania. In F. Smith's collection.

12. *Pison morosus,* (White, Voy. Erebus and Terror, not published), Smith, Cat. Hym. Ins. pt. iv. p. 317.

Hab.—New Zealand. In the British Museum.

13. *Pison suspiciosus,* Smith, Journ. Proc. Linn. Soc. Zool. ii. 104. ♀.

Hab.—Singapore. In W. W. Saunders' collection.

14. *Pison nitidus,* Smith, Journ. Proc. Linn. Soc. Zool. iii. 160. ♀.

Hab.—Aru and Ké Islands, Mysol. In W. W. Saunders' collection.

15. *Pison pallidipalpis,* Smith, Journ. Proc. Linn. Soc. Zool. vii. 35. ♀.

Hab.—Ceram. In W. W. Saunders' collection.

16. *Pison fenestratus,* Smith.

P. nitidus, Smith, Trans. Ent. Soc. 1868, p. 248. ♀.

Hab.—Champion Bay. In F. Smith's collection.

17. *Pison paraensis,* Spin. Mem. Accad. Torino, xiii. 58.

Hab.—Para.

18. *Pison chiliensis,* Spin. Gay's Chili, vi. 326.

Hab.—Chili.

19. *Pison areolatus,* Spin. Gay's Chili, vi. 327.

Hab.—Chili.

20. *Pison lævis,* Smith, Cat. Hym. Ins. pt. iv. p. 317. ♀.

Hab.—Georgia. In the British Museum.

21. *Pison maculipennis,* Smith, Journ. of Ent. i. 80. ♀.

Hab.—Brazil. In F. Smith's collection.

22. *Pison tahitensis,* (*P. tahitense*), Saussure, Reise der Novara, Zool. Hym. 65. ♀.

Hab.—Tahiti.

23. *Pison tibialis*, n. sp.

Male. Length 4 lines. Black, punctured, abdomen with golden fasciæ, the tibiæ ferruginous.

Head and thorax very closely and strongly punctured, semi-opaque; the face covered with griseous pubescence; the anterior margin of the clypeus produced into a central acute tooth. The metathorax truncate, short and punctate, with a slight channel above, which has a longitudinal carina; the wings subhyaline, the tegulæ piceous; the tarsi, tibiæ, and apex of the posterior femora ferruginous. Abdomen closely and finely punctured, the apical margins of the segments of a testaceous yellow, and covered with a pale golden pubescence.

Hab.—West Australia.

In the British Museum.

24. *Pison basalis*, n. sp.

Female. Length 5 lines. Black; the face with golden pubescence, the tibiæ, tarsi, and two basal segments of the abdomen ferruginous.

Head opaque; the clypeus and sides of the face as high as the sinus of the eyes, with pale golden pubescence, that on the cheeks silvery; the tips of the mandibles and the four basal joints of the antennæ ferruginous. Thorax: the collar with golden pubescence, that on the sides of the thorax silvery, but only perceptible in certain lights, except at the sides of the metathorax, where it is dense; the metathorax channelled, obliquely striate above, and coarsely transversely so behind; the tegulæ and legs ferruginous, the intermediate and the posterior coxæ and trochanters, the intermediate femora above, and the posterior pair, excepting at their apex, black; the wings subhyaline, with their apical margins clouded. Abdomen: the two basal segments ferruginous, with the basal half of the first black; the margins of the segments rufo-testaceous, and covered with bright silvery pile.

Hab.—Australia.

In F. Smith's collection.

This species is most closely allied to *Pison auratus*.

25. *Pison simillimus*, n. sp.

Male. Length $4\frac{3}{4}$ lines. Black, very finely and closely

punctured, the face with golden pubescence, and the abdomen with golden fasciæ.

Head: the face, as high as the emargination of the eyes, covered with golden pubescence; the clypeus with an acute tooth in the centre of its anterior margin. Thorax: the collar and mesothorax posteriorly with golden pubescence; the metathorax with a central longitudinal channel, which widens into a deep elongate fossulet down the truncate portion, which is transversely rugose-striate; the upper portion of the metathorax is obliquely rugose-striate, much more finely so than the truncation; the tegulæ rufo-testaceous; the wings hyaline, with their apical margins clouded, the nervures black; the posterior tibiæ, the apex of the anterior and posterior pair, and the tarsi, ferruginous. The apical margins of the segments of the abdomen rufo-testaceous, and covered with golden pubescence; the four apical segments have a changeable thin golden pile.

Hab.—Australia.

In F. Smith's collection.

This species is very like *P. tibialis*, but it is distinct; the mesothorax is much more finely punctured; the metathorax is longer, and so is also the basal segment of the abdomen.

26. *Pison aurifex*, n. sp.

Female. Length 6 lines. Black, opaque, splendidly ornamented with golden pubescence.

Head: the mandibles and four or five of the basal joints of the antennæ ferruginous, the latter more or less dusky above, and the extreme base and apex of the former black; the clypeus and sides of the face as high as the sinus of the eyes clothed with golden pubescence, the cheeks are similarly adorned. Thorax: the collar, the central portion of the posterior margin of the mesothorax, and the metathorax above, covered with a brilliant changeable golden pubescence; the pectus and femora also, in certain lights, have a golden effulgence; the tips of the femora, the tibiæ and tarsi, ferruginous; the wings subhyaline and iridescent, their apical margins clouded, the nervures testaceous. Abdomen: the apical margins of the segments rufo-testaceous, and covered

with a brilliant golden pile, the entire abdomen, in certain lights, has a golden lustre.

The male resembles the female; the clypeus has a central tooth on its anterior margin.

Hab.—Australia.

In F. Smith's collection.

27. *Pison separatus*, n. sp.

Male. Length 4 lines. Black, punctured, the metathorax not striate, abdomen with silver fasciæ.

Head finely and closely punctured, opaque; the clypeus with a central tooth on its anterior margin, the face with silvery pubescence as high as the sinus of the eyes; tips of the mandibles rufo-piceous, the palpi rufo-testaceous. Thorax slightly shining, closely and rather finely punctured; the metathorax with a central longitudinal channel, the upper portion of which has a slight carina; the collar and sides with short sparing silvery pubescence; the wings smoky and iridescent; the tarsi obscurely rufescent. Abdomen shining, very finely and closely punctured; the apical margins of the segments depressed, and with silvery fasciæ.

Hab.—Western Australia (Champion Bay).

In the British Museum.

28. *Pison fuscipennis*, n. sp.

Female. Length 7 lines. Black, slightly shining, adorned with silvery spots and bands.

Head: the face covered with bright silvery pile, the cheeks with a similar brilliant clothing. Thorax: the collar, sides of the mesothorax, of the metathorax, as well as the pectus, with a bright changeable silvery pile; the mesothorax above, and the scutellum, finely and closely punctured; the anterior wings, excepting their base, and the apex of the posterior pair, fuscous; a semitransparent nebula crosses the anterior wings a little beyond the second submarginal cell; the metathorax obliquely and finely rugulose above, and transversely and coarsely striate behind. Abdomen: all the segments with brilliant silvery fasciæ on their apical margins; beneath, shining and delicately punctured.

Hab.—Australia (Champion Bay).

In the British Museum.

This species is like *P. Spinolæ*, but is separated from it by its punctured mesothorax and fuscous wings.

29. *Pison decipiens*, n. sp.

Male. Length 3 lines. Black, the legs red.

Head: the tips of the mandibles, the four basal joints of the antennæ, and the legs, ferruginous; the apical margins of the segments of the abdomen rufo-testaceous; the pulvillus of the claw-joints of the legs black; the second joint of the antennæ black at the base, and the fourth joint more or less black above; the face covered with silvery pubescence as high as the emargination of the eyes; the clypeus with an acute tooth in the middle of its anterior margin; the cheeks silvery. Thorax very closely and rather finely punctured, the mesothorax shining above; the metathorax with a central channel, semi-opaque, and with a little silvery pubescence at the sides and behind; the wings subhyaline and iridescent, the nervures black, slightly clouded at their apical margins. Abdomen: very closely and finely punctured, slightly shining; the apical margin with silvery fasciæ above; beneath shining.

Hab.—Australia (Champion Bay).

In the British Museum.

This species has precisely the aspect of a *Tachytes*.

30. *Pison dimidiatus*, n. sp.

Male. Length $2\frac{3}{4}$ lines. Head and thorax black, abdomen red.

Head: clothed as high as the insertion of the antennæ with silvery pubescence, above which, nearly as high as the anterior ocellus, it has a golden lustre; the mandibles, and scape of the antennæ beneath, ferruginous, as are also two or three of the basal joints of the flagellum. Thorax: the mesothorax and scutellum closely and finely punctured; the metathorax punctured above, coarsely so behind; the collar and sides of the metathorax with silvery pubescence; the tegulæ and legs ferruginous, with the anterior coxæ black; wings subhyaline, iridescent, with the nervures black. Abdomen ferruginous,

with the margins of the segments depressed, and having bright silvery fasciæ; beneath, the extreme base of the abdomen is black.

Hab.—Australia (Champion Bay).

In the British Museum.

31. *Pison festivus*, n. sp.

Female. Length 5½ lines. Black, the wings fusco-hyaline, the apical segments of the abdomen with bright golden fasciæ.

Head: the face with a thin silvery pubescence below the insertion of the antennæ, a thin hoary pubescence on the cheeks and vertex. Thorax: the mesothorax shining, and, as well as the scutellum, strongly punctured; the metathorax obliquely rugulose above, on each side of a central impressed line; behind it is strongly punctured; the sides and beneath with a thin hoary pubescence; wings fusco-hyaline. Abdomen shining; the first segment rather strongly punctured, and its apical margin with a little silvery pubescence laterally; the following segments are very finely and very closely punctured, their apical margins with bright golden fasciæ; beneath shining and impunctate.

Hab.—Australia (Champion Bay).

In the British Museum.

32. *Pison tuberculatus*, n. sp.

Male. Length 3 lines. Head and thorax opaque black, the abdomen shining.

Head: the face below the insertion of the antennæ with silvery pubescence, the anterior margin of the clypeus produced into a central acute tooth. Thorax: a thin silvery pubescence on the sides and beneath; the metathorax rounded, obliquely rugulose above, and transversely, more coarsely so behind; wings fusco-hyaline, darkest at their apical margins. Abdomen smooth and shining, the apical margins of the segments depressed; the silvery fasciæ probably obliterated; beneath, the second, third, and fourth segments have two minute tubercles in the middle near their apical margins; those on the third segment are most prominent.

Hab.—New Zealand.

In the British Museum.

33. *Pison insularis*, n. sp.

Female. Length 4½ lines. Black, shining, and finely punctured; the abdomen with silvery bands.

Head semi-opaque, with the face as high as the sinus of the eyes densely clothed with bright silvery pubescence; the cheeks and vertex behind with a thin changeable silvery pubescence; tips of the mandibles rufo-piceous, and the palpi pale testaceous. Thorax: covered with a short thin silvery pubescence, most sparing on the mesothorax; the thorax is very finely punctured; the metathorax oblique, and rounded at the apex, which is transversely striate; a longitudinal channel runs from the base to the apex; wings subhyaline, the nervures black, the outer margin of the tegulæ rufo-piceous. Abdomen shining, and very delicately punctured, the margins of the segments depressed, and with bright changeable silvery bands, not continued beneath.

Hab.—New Hebrides.

In the British Museum.

34. *Pison fabricator*, n. sp.

Female. Length 3½ lines. Black, head and thorax strongly punctured, the abdomen smooth and shining.

Head closely and strongly punctured, the vertex slightly shining, and not so closely punctured as the face; the clypeus and sides of the face as high as the sinus of the eyes covered with bright silvery pubescence; the palpi testaceous. The pro- and meso-thorax strongly punctured; the metathorax truncate, with a deep fossulet at the verge of the truncation above; the upper surface obliquely and strongly striate; the truncation coarsely rugose; the outer margins of the tegulæ testaceous, the wings subhyaline, with their apical margins clouded, the nervures black; the thorax has a thin griseous pubescence. Abdomen smooth and shining, with very delicate scattered punctures.

Hab.—Hong Kong.

In the British Museum.

35. *Pison conformis*, n. sp.

Male. Length 3 lines. Head and thorax punctured and semi-opaque; abdomen shining.

Head: the clypeus and sides of the face as high as the sinus of the eyes with a dense silvery pubescence, the cheeks thinly covered with the same. The mesothorax closely punctured; the metathorax obliquely truncate, smooth, and finely punctured above, but transversely and coarsely striate at the sides and behind, the sides have also some silvery pubescence; a deep longitudinal channel runs from the base to the margin of the truncation, in which is a longitudinal carina; down the truncation runs another deep channel; the wings hyaline and iridescent, the nervures black. Abdomen: the margins of the three basal segments much depressed; the abdomen has a fine hoary pubescent pile, only observable in certain lights.

Hab.—Mexico.

In the British Museum.

Genus Pisonitus, Shuck.

(See Plate VI. fig. 7, for wing of *Pisonitus rugosus*).

1. *Pisonitus rufipes*, Shuck. Trans. Ent. Soc. ii. 79. ♀.

Hab.—Tasmania.

In the British Museum.

2. *Pisonitus argentatus*, Shuck. Trans. Ent. Soc. ii. 79. ♀.

Hab.—Mauritius.

In the British Museum.

3. *Pisonitus rugosus*, Smith, Cat. Hym. Ins. pt. iv. p. 313. ♀.

Hab.—India.

In the British Museum.

4. *Pisonitus ruficornis*, Smith, Cat. Hym. Ins. pt. iv. p. 315. ♀.

Hab.—Australia (MacIntyre River).

In the British Museum.

Genus Parapison, n. g.

(See Pl. VI. fig. 6. for wing of *Parapison rufipes*).

Head as wide as the thorax, occasionally wider; eyes large, reniform, ocelli in an equilateral triangle on the

vertex. Thorax sub-ovate, the collar transverse; the metathorax with a central longitudinal channel; the anterior and intermediate tibiæ with a single spine at the apex; *the anterior wings with one elongate marginal cell, and two submarginal ones, the first submarginal receiving the first recurrent nervure towards the apex, the second recurrent nervure uniting with the first transverso-medial nervure.* Abdomen oblong-ovate, the margins of the first and second segments depressed.

It will be seen that this genus is established solely upon the absence of the second submarginal cell which, in the genus *Pison*, and also in *Pisonitus*, is petiolate; in some species the cell is very minute, in the present genus it is obliterated, and that this is a constant character there can be no doubt, as a large number of specimens of *P. agilis* and of *P. rufipes* have been examined.

1. *Parapison obliteratus*, Smith.

Pisonoides obliteratus, Smith, Journ. Proc. Linn. Soc. Zool. ii. 104.

Hab.—Borneo (Sarawak).

In the collection of W. W. Saunders.

2. *Parapison rufipes*, n. sp.

Female. Length 3¼ lines. Black and shining, the legs ferruginous, abdomen with silvery bands.

Head: very finely and closely punctured, the clypeus, inner orbits of the eyes, and the cheeks, with bright silvery pile; the mandibles ferruginous. Thorax punctured like the head; the mesothorax with a central longitudinal depression, and an abbreviated line on each side opposite the tegulæ; the metathorax with a deep central longitudinal channel; the collar and sides of the thorax with silvery pubescence, most dense and long at the sides of the metathorax; the legs ferruginous, with the coxæ black above; wings hyaline and iridescent, the nervures and stigma black. Abdomen; the apical margins of the segments pale testaceous, and covered with silvery pile; the entire abdomen has a thin changeable silvery pile above.

Hab.—India.

In the British Museum.

3. *Parapison ruficornis*, n. sp.

Female. Length 3 lines. Black, legs and antennæ red, the latter with three or four of the apical joints dusky.

Head semi-opaque, finely and very closely punctured; the face with silvery pubescence, which is dense below the insertion of the antennæ, and only observable in certain lights above; the palpi and mandibles rufo-testaceous, the latter rufo-piceous at their apex. Thorax opaque, the metathorax with a central channel, and obliquely rugulose above; the wings hyaline and iridescent, the nervures testaceous. Abdomen slightly shining, the apical margins of the segments narrowly testaceous; the four apical segments with a changeable golden pubescence.

The male closely resembles the female, but has the basal portion of the legs more or less blackish, the tarsi also are dusky; the apical joints of the antennæ are darker than in the other sex.

Hab.—Australia.

In F. Smith's collection.

4. *Parapison agilis*, n. sp.

Female. Length 3 lines. Black, shining and delicately punctured, abdomen with silvery fasciæ.

Head: the face below the insertion of the antennæ with a fine changeable silvery pile; the mandibles pale rufo-testaceous, the palpi paler. Thorax: the collar, sides of the thorax, and metathorax, with silvery pubescence; the mesothorax with one abbreviated deeply-impressed line on each side opposite the tegulæ, the latter rufo-testaceous; the wings hyaline and iridescent, the nervures black, the apical margins slightly clouded; the metathorax obliquely truncate, with an impressed central channel, which runs into a deep fossulet towards the apex; the knees and anterior tibiæ testaceous; the calcaria testaceous. Abdomen with a changeable pile; the margins of the three basal segments depressed, the first deeply so; all the margins with a narrow silvery fasciæ.

Hab.—Ceylon.

In the British Museum.

XVIII. *Descriptions of New Genera and Species of Exotic Hymenoptera.* By Frederick Smith, V.-P. and late Pres. Ent. Soc.

[Read 7th June, 1869.]

The majority of the insects described in the present paper are in the British Museum; all are of great rarity, and some present such new combinations of characters that I have found it necessary to construct four new genera for their reception; several of the species described are in Mr. Du Boulay's private collection of *Hymenoptera*, lately purchased for the National Museum. I hope shortly to offer to the Society descriptions of some of the *Apidæ* in the same collection, which contains several insects which will form types of new genera.

Fam. MUTILLIDÆ.

Genus Methoca.

Methoca mandibularis.

Male. Length 7¼ lines. Black, shining and punctured, the mandibles yellow.

Head: shining, and strongly punctured; the face and mandibles with long white hairs, those on the rest of the head are shorter and thinner; the antennæ as long as the thorax and first segment of the abdomen; the anterior margin of the clypeus rounded, and with a notch in the middle; the mandibles yellow, with their apex nigro-piceous. Thorax coarsely punctured, the punctures close and more or less confluent on the metathorax, on the pro- and meso-thorax they are wider apart, but coarse, and here and there confluent; the metathorax with a central longitudinal channel, and, as well as the thorax beneath, thinly clothed with hoary pubescence; the legs obscurely rufo-piceous; wings subhyaline, darkest towards the apex of the wings, a fuscous cloud occupies the marginal cell; the nervures black. Abdomen: finely and distantly punctured, the punctures strongest towards the apex; the petiole of the abdomen compressed, and with a thin sharp edge; the first segment globose at the apex, the

rest of the segments with their margins constricted; the apical mucro stout and curving upwards beyond the apical segment.

Hab.—Shanghai.

This insect was presented to me by H. De Rivaz, Esq.

Fam. SCOLIIDÆ.

Genus Pterombrus.

Head wider than the thorax, subglobose; eyes lateral and oblong-ovate; antennæ filiform, inserted on each side of a bituberculate prominence in the middle of the face; the scape obconic, the first joint of the flagellum globose, and inserted in a cavity at the apex of the scape, the following three joints of about equal length, the remaining ones slightly decreasing in length to the apical one. Thorax elongate, the prothorax produced anteriorly into a short neck, its posterior margin extending backwards to the insertion of the wings; the metathorax oblong, its apex rounded; *the anterior wings with one elongate marginal cell pointed at its apex; three submarginal cells, the first nearly as long as the two following, the second quadrangular, and narrowed towards the marginal;* the third obliquely quadrate; legs moderately stout, with the tarsi long and slender. Abdomen elongate, petiolate, its apex pointed and terminated by an acute style, the aculeus exserted.

This genus is founded upon the characters of one sex, and those characters are so anomalous, as to leave upon my mind considerable doubt as to the correctness of determining it to be the female; the antennæ are twelve-jointed, and the abdomen is furnished with a sting, these are, no doubt, the normal characteristics of the female, but the abdomen is composed apparently of seven segments; it has undoubtedly seven distinct plates above, whilst beneath the number is only six; I have therefore regarded the apical dorsal plate as a sheath or component part of the exserted aculeus. That the insect belongs to the *Scoliidæ*, I think is certain; the prolongation of the thorax to the insertion of the wings, and a similarity of the neuration of the latter to that of *Myzine*, induce me to place it next to that genus.

Pterombrus ænigmaticus.

(Pl. VI. fig. 1, and details 1*a* and 1*b*.)

Female. Length 5 lines. Head and thorax black, the abdomen red.

Head closely punctured, with the middle of the vertex, and a space around the ocelli, shining, and having a few scattered punctures; the face and cheeks with a thin griseous pubescence; the mandibles rufo-piceous, with a pale spot at their base; the palpi pale testaceous. Thorax: the mesothorax and scutellum shining, with a few deep punctures; the metathorax transversely and coarsely rugose, the apex obliquely truncate; wings subhyaline, with a fuscous cloud at the base of the first and second discoidal cells; another cloud occupies the marginal cell, and crosses the wing as far as the inferior margin of the third discoidal cell; the nervures black; the tarsi as long as the legs, the spurs at the apex of the tibiæ pale testaceous. Abdomen ferruginous, smooth and shining.

Hab.—Brazil.

In the Collections of W. W. Saunders and F. Smith.

I have only seen two examples of this insect.

Fam. POMPILIDÆ.

Genus Dolichurus.

1. *Dolichurus carbonarius.*

Female. Length 3 lines. Shining black, with the metathorax subopaque.

Head: the face longitudinally and coarsely sculptured, the vertex smooth and shining; the antennæ inserted on each side of a concave tubercle situate at the base of the clypeus, the latter with a sharp carina down the middle. The prothorax transverse-quadrate, with a shining tuberculate process on each side, and a few transverse striæ in front; the mesothorax and scutellum smooth and shining; the metathorax above nearly quadrate, margined by an elevated carina, transversely and coarsely sculptured, and having three longitudinal carinæ scarcely extending to the posterior margin; the truncation rugose, a minute tooth at the lateral margins a little beyond the middle. The abdomen smooth and shining, and the margins of the first and second segments depressed.

Hab.—Australia (Champion Bay).

In the British Museum.

2. *Dolichurus ignitus.*

Female. Length $3\frac{3}{4}$ lines. Black and shining, the tip of the abdomen red.

Head: black, shining, and strongly punctured, the vertex most sparingly so; the clypeus smooth and shining, its anterior margin truncate and rufo-piceous; the mandibles ferruginous, their extreme base and apex black. The pro- and meso-thorax shining; the metathorax with the margins above carinate, with a central and two lateral carinæ, between which is a series of transverse elevations irregular and ill-defined; the truncate portion is coarsely rugose, and the lateral margins have a minute tooth beyond the middle; the wings hyaline and iridescent; the outer margin of the tegulæ piceous; the tarsi, and the anterior tibiæ obscurely ferruginous. Abdomen shining and impunctate; the margins of the two basal segments constricted; the two apical segments ferruginous.

Hab.—Port Natal.

In F. Smith's Collection.

3. *Dolichurus taprobanæ.*

Male. Length $4\frac{1}{4}$ lines. Black, smooth, and shining.

Head: the face longitudinally rugulose, a few scattered punctures before the ocelli, with the vertex impunctate; the clypeus with a central elevated carina; the palpi pale testaceous; the tubercle in the middle of the face deeply concave. Thorax: the mesothorax with a few fine shallow punctures; the metathorax margined above, with two approximate carinæ in the centre, and another on each side, the interspaces rugose; the truncation rugose, with a stout tooth in the middle of the lateral margins; the wings hyaline and iridescent, the nervures black; the thorax is strongly and closely punctured at the sides and beneath. Abdomen smooth, shining, and impunctate.

Hab.—Ceylon.

In F. Smith's Collection.

Fam. LARRIDÆ.

Genus Larrada.

Larrada chrysonota.

Female. Length $6\frac{1}{4}$ lines. Black, and adorned with silvery pile, the mesothorax clothed above with golden pile.

Head: the face, as high as the insertion of the antennæ, with silvery pubescent pile, above with golden; the cheeks and base of the mandibles silvery. Thorax: a dense golden pubescent pile on the mesothorax, and a changeable thin silvery one on other parts, on the apex of the sides of the metathorax it is dense and brilliant; the legs have a glittering changeable silvery pile; the anterior wings and apex of the posterior pair fusco-hyaline. The abdomen has a chequered brilliant silvery pile above and beneath; the apical margins of the segments above, and the middle of the segments, are splendidly brilliant and glittering.

Hab.—Australia (Champion Bay).

In the British Museum.

Genus Aulacophilus, n. g.

Head as wide as the thorax; eyes large, their inner orbit deeply emarginate; the ocelli in an equilateral triangle on the vertex; the antennæ inserted at the base of the clypeus, at an equal distance from each other and the inner margin of the eyes; the anterior margin of the clypeus rounded; the mandibles arcuate, edentate, acute at their apex; the antennæ thickened towards their apex, the scape obconic, the second joint subglobose. Thorax oblong-ovate, the collar transverse, the posterior margin arcuate; the metathorax oblong, rounded behind; legs simple, the anterior and intermediate tibiæ with a single spine at their apex; *the anterior wings with one elongate marginal, and two submarginal cells, the first twice the length of the second; the first recurrent nervure uniting with the first transverso-medial nervure; the second received a little within the second submarginal cell.* Abdomen heart-shaped; the first segment formed into an elongate petiole terminating in a clavus at its apex.

Aulacophilus vespoides.

(Plate VI. fig. 4, and details 4*a* and 4*b*.)

Female. Length 5 lines. Black, and ornamented with golden pubescence.

Head: the clypeus and the sides of the face, as high as the emargination of the eyes, with dense golden pubes-

cence; the tips of the mandibles, and the three basal joints of the antennæ, ferruginous. Thorax: the posterior margin of the collar and of the scutellum, the post-scutellum and the metathorax, with golden pubescence; the anterior coxæ with golden pubescence in front; the sides of the thorax obliquely striate beneath the wings; the metathorax with a longitudinal central channel, most deeply impressed towards the apex; the legs obscurely ferruginous, the anterior pair brightest; the wings hyaline, with the anterior margin of the superior pair fuscous. Abdomen: the petiole deeply channelled above, and also at the sides; the channel above with golden pubescence, the apical margin of the club as well as the apical margins of the other segments bordered with golden pubescence; beneath, smooth and shining, with the margins of the segments rufo-piceous.

Hab.—Brazil.

In F. Smith's collection.

This insect has the general aspect of a species of the genus *Polybia* belonging to the *Vespidæ*.

Fam. NYSSONIDÆ.

Genus Acanthostethus, n. g.

Head scarcely as wide as the thorax; eyes lateral, large and ovate; ocelli placed in a curve on the vertex, the posterior pair in a line with the summit of the eyes; antennæ approximate at the base, inserted at the base of the clypeus; the scape obconic, the second joint subglobose, the flagellum slightly increasing in thickness towards the apex; the clypeus transverse, its anterior margin nearly straight, its lateral angles sub-dentate; mandibles arcuate, edentate, and acute at their apex; the labrum concealed, transverse. Thorax ovate; the collar transverse; the scutellum subquadrate; the metathorax having on each side at its posterior extremity a stout acute spine; *superior wings with one marginal and two complete submarginal cells; the marginal cell elongate, extending more than half-way towards the extremity of the wing; the first submarginal longer than the marginal, and more than twice the length of the second submarginal cell, which is triangular; the first recurrent nervure entering the first submarginal cell towards its apex, the second recurrent*

nervure uniting with the first transverso-cubital nervure. Abdomen subsessile, ovoido-conic; the first ventral segment produced at the base, forming an obtuse angle. (Female.)

Acanthostethus basalis.

(Plate VI. fig. 3, and details 3*a* and 3*b*.)

Female. Length 4 lines. Black, with the collar and base of the abdomen red.

Head, thorax, and base of the abdomen coarsely and deeply punctured, the rest of the abdomen more finely and distantly punctured, and slightly shining. The mandibles, the scape, and the three following joints of the antennæ ferruginous beneath; the tips of the mandibles black. The collar, tubercles, tegulæ, and the margins of the mesothorax opposite to them, the tips of the metathoracic spines, and the legs, ferruginous; the wings subhyaline, the nervures black. Abdomen: the base rounded, the segment short, ferruginous, with the apical margin pale yellow; the second segment black, with its apical margin yellow, the sides of the segment are suffused with obscure ferruginous, as well as the edge of the narrow yellow margin; the following segments are obscure ferruginous, the third segment as well as the apical one black at the basal margin, in the apical one the black forms an elongated spot.

Hab.—Australia.

In the British Museum.

The general appearance of this insect is that of a very large example of the *Nysson dimidiatus* of Europe.

Genus Miscothyris, n. g.

Head transverse, about the width of the thorax, eyes ovate, very large and occupying the larger part of the head; the ocelli placed in a triangle on the vertex; the antennæ inserted a little above the base of the clypeus, approximate at their base, the flagellum sub-clavate; the mandibles arcuate, bidentate at their apex; the clypeus triangular, its anterior margin slightly rounded; the

labrum concealed. The thorax oval; the collar transverse and linear; the scutellum transverse; the metathorax short, and truncate posteriorly; the superior wings with one elongate marginal cell tapering to a point at the apex; three submarginal cells, the first being three-fourths of the length of the second and third, the second oblong-quadrate, and narrowed towards the marginal cell, the third oblique, and widest at its extremity; the legs of moderate length; the posterior tibiæ incrassate, slightly curved and denticulate on their outer margin. Abdomen subtruncate at the base, incurved and tapering to its apex; in the male, the second segment is produced into a compressed tubercle beneath.

Miscothyris thoracicus.

(Plate VI. fig. 5, and details 5*a* and 5*b*.)

Male. Length 4½ lines. Black, an interrupted line on the collar, the post-scutellum, two large spots on the second segment of the abdomen, and a transverse one on the apical margins of the fifth and sixth segments in the middle, all orange.

Head: the clypeus with the basal half yellowish-white, a minute spot above the clypeus, the scape in front, and a narrow line at the inner margin of the eyes not running quite so high as the anterior ocellus, of the same colour as the clypeus; the head is finely shagreened and semi-opaque. Thorax: sculptured similarly to the head, with the scutellum shining, and sparingly punctured at its base; the post-scutellum is smooth shining orange; the wings fusco-hyaline, with their base and apex clear hyaline; a central small shining triangular space at the margin of the truncation of the metathorax, which is obliquely and finely striate; the tibiæ, tarsi and knees ferruginous; the anterior tibiæ yellow at their apex beneath, the basal joint of the posterior tarsi white. Abdomen finely shagreened, two large oblong orange spots on the second segment, pointed inwardly, and nearly meeting in the centre; a transverse orange lunate spot on the centre of the apical margin of the fifth and sixth segments.

Hab.—Australia (Champion Bay).

In the British Museum.

Fam. MASARIDÆ.

Genus Paragia.

1. *Paragia excellens.*

Female. Length 7 lines. Black; the head and thorax ornamented with orange, the legs of the same colour; the three basal segments of the abdomen orange.

Head: very closely punctured; the clypeus produced, its anterior margin slightly arched; the mandibles longitudinally grooved and punctured, ferruginous, with their margins and teeth black; the clypeus and a semi-ovate spot above, orange, the anterior margin of the former black. The thorax rugose; the prothorax, a subquadrate spot beneath the wings, the scutellum, an oblong-quadrate spot before it on the mesothorax, a narrow line at the sides passing beyond the tegulæ to the impressed line that runs backwards to the scutellum, a minute spot on each side beyond the line, the spine and lateral margins of the metathorax, and a central elongate spot, bright orange; the legs pale orange-red; the wings hyaline, with a dark fuscous line occupying the marginal and first submarginal cells, and running from thence half-way towards the base of the wing; the tegulæ pale orange. Abdomen: the first segment orange, with its base black, the second orange, with its extreme lateral and basal margins black; the third segment orange, with a minute triangular central black spot at its base; the other segments black, with the extreme apex of the terminal one orange; beneath, the second segment has a tri-furcate orange apical margin, the third segment orange, with its basal margin narrowly black.

Male. This sex differs only in having the clypeus entirely yellow, a yellow line at the inner orbits of the eyes.

Hab.—Australia (Champion Bay).

In the British Museum.

2. *Paragia sobrina.*

Female. Length 7 lines. The head and thorax ornamented with orange spots, the first and third segments of the abdomen orange.

This species is very like *P. excellens;* the head is the same in colour and sculpture; the thorax is also very

similar, but the two minute orange spots on the mesothorax are wanting; the scutellum is broader and more quadrate, the posterior angles rounded, and it is not narrowed posteriorly as in *P. excellens;* the abdomen has the first, third, and apical segments yellow; in other respects the two species agree in colour, sculpture and form, and possibly one is a variety of the other.

Hab.—Australia (Champion Bay).

In the British Museum.

In the Transactions of this Society (third series, vol. ii. p. 393) I described three new species of *Paragia;* of one of these, *P. vespiformis,* only the female was then known to me; subsequently, however, both sexes were taken by Mr. Du Boulay, and the male was described in the Transactions for 1868 (p. 250); this sex is remarkable for the extraordinary form of the basal segment of the abdomen, I have therefore given a figure of that sex in the plate that illustrates this paper (Pl. VI. fig. 2).

Since I published the last consecutive list of the species of the genus *Paragia,* numbering thirteen, I have added three in the volume for 1868, two others are described in the present paper, making the number of known species to be eighteen.

Fam. EUMENIDÆ.

Genus Rhynchium.

Rhynchium magnificum.

Female. Length 10½ lines. Black; head, thorax anteriorly, scutellum, and apical half of the abdomen, orange.

Head: orange, with the tips of the antennæ fuscous; the mandibles ferruginous, armed with five teeth, which are black, as well as the outer margin at the base; the prothorax, a spot beneath the wings, the mesothorax above, and the scutellum, bright orange; the metathorax black, its lateral margins serrate, concave behind, the concavity obliquely striate; the tegulæ orange, the wings flavo-hyaline, but dark fuscous with a violet or purple iridescence from the base of the marginal cell to their apex; the anterior legs, except their coxæ, the intermediate femora in front towards their apex, and the tibiæ beneath, orange; the posterior tibiæ more or less orange-red beneath; the apical joints of the tarsi reddish. Abdomen:

the basal segment, and basal half of the second segment, black, both entirely so beneath; the rest of the segments orange.

Hab.—Australia (Nicol Bay).

In the British Museum.

Explanation of Plate VI.

Fig. 1. *Pterombrus œnigmaticus*, and details.
2. *Paragia vespiformis*, ♂.
3. *Acanthostethus basalis*, and details.
4. *Aulacophilus vespoides*, and details.
5. *Miscothyris thoracicus*, and details.
6. Anterior wing of *Parapison rufipes*.
7. „ „ *Pisonitus rugosus*.

XIX. *Notes on* Chalcididæ; *and Description of a new species of* Megastigmus. By F. Walker, F.L.S.

[Read 7th June, 1869.]

A few species of *Megastigmus* inhabit England. *M. giganteus*, the largest species of the genus hitherto described, is a native of S. Europe. *M. Pistaciæ*, so named by Haliday, and presented by him to the British Museum, is a very elegant Italian species. The known Australian species are smaller than most of those of Europe. *M. Pinus* of Parfitt, and the species here described, are natives of California, and are both of large size. There is an affinity in structure, colour, and markings between some species of this genus and some of *Decatoma*. The latter genus is one of the *Eurytomidæ*, and, like *Megastigmus* and *Eurytoma*, is parasitic, on gall-making insects. A North-American species of the *Eurytomidæ* was described many years ago as *Eurytoma hordei*. Harris, the original describer, Fitch, and Walsh, at first supposed it to be parasitic, but were afterwards convinced that the larva is herbivorous. Walsh has recently observed that it is not a *Eurytoma*, but an *Isosoma*, and that it is very injurious to the corn in the Eastern States from Virginia to Canada. He supposes that all the species of *Isosoma* are herbivorous, and that *Eurytoma hordei*, Harris; *E. tritici*, Fitch; *E. secalis*, Fitch; and *E. fulvipes*, Fitch, are one species. I have reared several species of *Eurytoma* from various kinds of galls, but never had an opportunity of observing the transformation of *Isosoma*. The British species of the latter genus are numerous, and various in structure, and some of them are yet undescribed. Giraud reared in Austria three species of *Isosoma* and *Pimpla graminellæ*, Grav., from *Triticum repens*, and believed them to be all parasitic on a Dipterous insect. If these species of *Isosoma* are herbivorous, it would seem that *Pimpla graminellæ*, an ichneumon-fly, which much exceeds them in size, and is very abundant in England, is their parasite. Walsh observes that one of the *Pteromalidæ*, which he names *Semiotellus chalcidiphagus*, is parasitic on *Isosoma hordei*. He also describes *Antigaster mirabilis*, a new genus, allied to *Eupelmus* and to *Notanisus*. *Chiropachys colon*, of which the natural history was lately noticed

by Dr. Algernon Chapman, is allied to the *Eupelmidæ*, and the earliest descriptions of it are here mentioned:—

Sphex colon, Linn. Faun. Suec. 1656; Syst. Nat. 945.

Ichneumon quadrum, Fabr. Ent. Syst. ii. 186.

Megastigmus albifrons.

Mas. Luteus; capite thoraceque dense punctatis; capite thorace latiore, plaga transversa nigra, fronte facieque albidis, antennis nigris, basi luteis; thorace vitta nigra, prothorace magna quadrata, mesothorace nigro-bimaculato, metathorace nigro; abdomine nigro, valde compresso, subtus luteo; alis diaphanis nigro-venosis, anticis gutta nigricante maculaque nigra.

Male. Luteous. Head and thorax thickly punctured. Head broader than the thorax; a large transverse black patch on the vertex, extending nearly to the eyes; front and face whitish; eyes piceous; antennæ black, filiform, rather shorter than the thorax, first joint luteous, joints of the flagellum successively decreasing in length; club fusiform, a little broader than the preceding joint. Thorax with a black stripe, which is attenuate in the middle, and extends from the fore-border of the prothorax nearly to the tip of the scutellum; prothorax quadrate, much developed; mesothorax with a black spot on each side of the scutum, sutures of the parapsides very distinct; metathorax black. Abdomen black, much compressed, luteous beneath, nearly as long as the thorax. Legs slender; tarsi black towards the tips. Wings pellucid; veins black; fore-wings with an indefinite blackish dot adjoining the hind side of the humerus, near the end of the latter, and with a determinate black spot at the end of the cubitus, as is usual in this genus; humerus about four times the length of the ulna, emitting a transverse veinlet to the hind border, near the inner side of the dot before-mentioned; radius more than twice the length of the ulna; cubitus about half the length of the ulna.

Length of the body, 2 lines; of the fore-wings, $3\frac{3}{4}$ lines.

"Found alive, in a glass-topped box, containing a fir cone, from California." March 10th, 1869.

British Museum.

XX. *Remarks on the Genus* Ectrephes, *and Descriptions of new Exotic* Coleoptera. By J. O. Westwood, M.A., F.L.S., &c.

[Read 7th June, 1869.]

Genus Ectrephes, Pascoe.

Ectrephes, Pascoe, Proc. Ent. Soc. Lond. 1866, p. xvi; Zoologist, ser. 2, vol. i. p. 322.

Anapestus, King, Trans. Ent. Soc., N. S. Wales, i. 316.

Mr. Pascoe's description of this curious genus was read at the meeting of this Society, on the 4th June, 1866, and was published in the following month. Mr. King's memoir was read before the Entomological Society of New South Wales on the 5th March, 1866, but the sheet of the Transactions on which it is printed contains the commencement of Mr. McLeay's paper on *Amycteridæ*, which was read on the 6th August, 1866, and Part V. of the Transactions, in which both papers appeared, contains the Journal of Proceedings for the 3rd September, 1866.

The genus has been considered to be allied to the *Paussidæ*, as well as to the genus *Gnostus*. But it possesses no direct affinity with either of these groups; and is proved, by the analysis of the forms described below, to be most nearly related to the *Ptinidæ*, especially to such groups as *Mezium* and *Gibbium*.

Sp. 1. *Ectrephes formicarum*, Pascoe.

E. formicarum, Pasc. (Proc. Ent. Soc. Lond. 1866, p. xvi) = *Anapestus Kreusleri*, King, (Trans. Ent. Soc. N. S. W. i. 318).

Sp. 2. *Ectrephes Pascoei*, n. sp.

E. totus piceo-castaneus; elytris nitidis, subsetigeris; antennarum clava oblongo-ovali, depressa; disco supero et infero transverse tri-impresso, marginibus paullo undulatis et breviter spinulosis; pronoto transverso, quadrato, impressione transversa postica profunda notato;

tibiis 4 posticis valde curvatis, margine externo ante medium bi-angulato, ultra medium emarginato. Long. corp. fere lin. 1.

Hab.—Swan River, Nov. Holl.; sub corticibus arborum mortuarum. (Dom. Du Boulay.)

In Mus. Hopeiano Oxoniæ.

Sp. 3. *Ectrephes Kingii*, n. sp.

E. totus luteo-fulvus, subnitidus; capite brevi, antennarum clava magna, fere plana, ovali, apice vix angulato, marginibus subundulatis; prothorace antice striolato, postice profunde impresso, lateribus in medio angulatis et pone angulum cicatricosis; elytris fere rotundatis, striato-punctatis; tibiis omnibus ante medium subangulatis. Long. corp. lin. $\frac{3}{4}$.

Hab.—Swan River. (Dom. Du Boulay.)

In Mus. Hopeiano Oxoniæ.

Polyplocotes, n. g.

Genus *Ectrephidem* cum *Ptinidis* conjungens. Corpus parvum, nitidum; pedibus longis, simplicibus, tarsis pentameris. Caput pronum, ante antennas subrostratum, pone antennas utrinque constrictum; mandibulæ magnæ, conicæ; maxillæ, cum palpis, omnino ut in *Ectrephide;* antennæ crassæ, 9-articulatæ, articulo 8° incrassato, ultimo parvo, truncato. Prothorax margine antico elevato, pone medium impressione profunda curvata, in incisionem lateralem utrinque terminata. Elytra ovalia, basi sulcis profundis impressa. Pedes approximati, binis posticis inter se magis distantibus.

This interesting genus satisfactorily solves the question of the affinity of *Ectrephes* with the *Ptinidæ*.

Sp. 1. *Polyplocotes longicollis*, n. sp.

P. niger, nitidus; antennis rugosis; prothorace oblongo, sulco transverso prope marginem anticum, disco punctato, pone medium semicirculariter impresso, striolato; elytris ad basin sulcis 6 profundis, dorso striato-punctatis. Long. corp. fere lin. $1\frac{1}{2}$.

Hab.—Swan River.

In Mus. Hopeiano Oxoniæ.

Sp. 2. *Polyplocotes nitidus*, n. sp.

P. piceo-niger, glaberrimus; antennis crassioribus, lævibus, nitidis, setosis; prothorace subquadrato, nitido, impunctato, impressione tenuissima postica notato; elytris glabris, impunctatis, basi vix sulcatis. Long. corp. lin. 1.

Hab.—Swan River.

In Mus. Hopeiano Oxoniæ.

Diplocotes, n. g.

Genus vel subgenus *Ptinorum*. Antennæ crassæ, 11-articulatæ; articulo 10° incrassato, et 3 antecedentibus simul sumptis æquante; ultimo parvo, fere rotundato. Caput et prothorax omnino ut in *Polyplocote*. Elytra ovalia, globosa, punctato-striata, et setosa. Pedes satis elongati, simplices; tarsis 5-articulatis, inermibus.

This insect in its peculiar antennæ connects *Polyplocotes* with *Ptinus*, especially with such species as *Ptinus hololeucus*, &c.

Sp. 1. *Diplocotes Howittanus*, n. sp.

D. totus castaneus, elytris magis fulvescentibus; setosus; antennarum articulis 2-9 moniliformibus; pronoto striolato, pone medium impressione curvata ad incisionem lateralem utrinque extensa et striolis profundioribus notata; elytris punctato-striatis. Long. corp. lin. 1.

Hab.—Gawler, Adelaide, Nov. Holl. (Dom. Odewahn.)

In Mus. Hopeiano Oxoniæ.

Chlamydopsis, n. g.

Genus *Chlamydem* habitu et *Ectrephidem* certo modo simulans; sed inter *Byrrhidas* (præsertim *Murmidium*, Leach = *Ceutocerum*, Schüpp.) et *Histeridas* intermedium. Corpus parvum, contractum, fere globosum; pedibus contractilibus, contra latera corporis arcte applicatis. Prothorax antice profunde incisus pro receptione capitis. Caput in prothorace fere omnino retractile (partes oris in individuis unicis haud examinatæ); antennæ 9-articulatæ, articulo 1° magno subtrigono, 7 proximis gracilibus, 4-8 minutis, 9° (vel clava) præcedentibus 6 longitudine æquali vel longiore, exarticulato. Elytra humeris valde gibbosis,

gibbositate in medio intus luteo-setosa. Metasternum maximum, coxis pedum posticorum haud prominulis. Pedes sub-elongati, tibiis depressis pro receptione tarsorum simplicium et 5-articulatorum. Abdomen segmento basali maximo.

Sp. 1. *Chlamydopsis Duboulaii*, n. sp.

C. tota castanea, nitida; pronoto subcylindrico, angulis posticis lateraliter porrectis, disco punctis ovalibus notato; elytris sparsim granulato-tuberculatis, setosis. Long. corp. lin. 1.

Hab.—Champion Bay, Nov. Holl. (Dom. Du Boulay.)

I have much pleasure in dedicating this species to a gentleman who has devoted a great share of his attention whilst in Australia to the collection of minute and singular species of *Coleoptera*, including also the following species (exhibited at the same Meeting of the Society by Mr. Pascoe; see Proceedings, 1869, p. xv).

Sp. 2. *Chlamydopsis striatella*, n. sp.

C. piceo-nigra, subnitida, pronoto transverso, margine antico acute elevato, angulis anticis auriculato-incisis, punctis longis setigeris obsito; elytris subquadratis, dorso valde irregularibus, spatio medio antico fossulato, humeris acute elevatis et sinuatis, parte dimidia postica striolis numerosissimis obsita. Long. corp. lin. $1\frac{1}{2}$.

Hab.—Swan River. (Dom. Du Boulay.)

This species seems to connect *Ectrephes* with certain *Histeridæ*, such as *Hetærius*, and especially with *Terapus* (De Marseul, Ann. Soc. Ent. France, 1862, p. 680, pl. vii).

Genus Articerus.

Sp. 1. *Articerus tumidus*, n. sp.

A. castaneo-rufus, vix nitidus, punctatus, luteo-setosus; capitis lateribus subparallelis, antennis ovalibus, basi anguste pedunculatis, apice subtruncatis; prothorace breviter ovato, subdepresso, canali brevi centrali longitudinali instructo; elytris sutura nigricante, absque linea

impressa longitudinali contigua; tarsis articulis 2 basalibus brevissimis, longe setosis; femoribus intermediis valde inflatis, prothoracem magnitudine æquantibus; tibiis omnibus apicem versus latioribus, depressis; abdomine postice paullo latiore. Long. corp. lin. $\frac{2}{3}$.

Hab.—Swan River. (Dom. Du Boulay.)

It is possible that this insect may be the male of *A. setipes*, Westw.

Sp. 2. *Articerus Amazonicus*, n. sp.

A. castaneo-rufus, subnitidus; capitis parte antica (ante oculos) angustiore, subquadrato, antice paullo latiore; antennis capitis longitudine, subcylindricis, rectis, sensim ad apicem crassioribus setosis, apice ipso truncato; prothorace latiore quam longo, versus caput angustato, subrugoso, postice in medio impressione lævi notato, marginibus lateralibus rotundatis; elytris prothorace multo latioribus, præsertim postice, striola subsuturali, alterisque 2 abbreviatis basalibus postice convergentibus; pedibus gracilibus, tibiis simplicibus, sensim e basi attenuata crassioribus. Long. corp. lin. $\frac{2}{3}$.

Hab.—Amazonia sup. (Dom. Bates.)

In Mus. Hopeiano Oxoniæ.

Genus Paussus.

Sp. 1. *Paussus Burchellianus*, n. sp.

P. totus castaneo-fulvus, setosus, nitidus; capite antice emarginato, antennarum clava supra oblonge excavata, marginibus excavationis tuberculatis, tuberculis setigeris, angulo supero basali in spinam longam tenuem apice obtuso producto; prothorace bipartito, parte antica angustiore, hujus margine antico transversim carinato et ad latera utrinque spina tenui obtusa armato; medio pronoti profunde impresso; pedibus longis, gracilibus, simplicibus. Long. corp. lin. 2.

Hab.—Graham's Town, Afric. austr.

In Mus. Hopeiano Oxoniæ.

Genus Aprostoma, Guérin.

Aprostoma, Guérin-Méneville, Rev. Zool. 1839, p. 171.

Sp. 1. *Aprostoma filum*, Guér., *l. c.*

The type of this genus inhabits Madagascar, and is, I

believe, still unique in the collection of M. Guérin-Méneville, who in 1842 allowed me to make a careful figure of it, and who considered it to be allied to *Calodromus* among the *Brenthidæ*, and to *Colydium*. The former relationship is due only to the very elongate and slender form of the insect. The latter is its genuine affinity, as is proved by the structure of the different parts of the mouth.

Sp. 2. *Aprostoma planifrons*, n. sp.

A. filiforme, cylindricum, nigrum, nitidum; capite subquadrato, supra plano, glabro, margine omni verticis acute elevato; antennis apicem versus sensim sed paullo crassioribus, et prothorace e 4a parte brevioribus; prothorace crebre punctato, linea media longitudinali impresso; elytris striis impressis punctatis notatis, linea elevata e medio utriusque ad apicem extensa. Long. corp. lin. 5.

Hab.—River Niger, Africa.

In Mus. Hopeiano Oxoniæ.

XXI. *Notes on Eastern Butterflies;* (continued). By Alfred R. Wallace, F.Z.S., V.-P. Ent. Soc., &c.

[Read 7th June and 5th July, 1869.]

Fam. EURYTELIDÆ.

Genus Elymnias, Hübner.

(*Melanitis*, part, Fabr.)

I follow Mr. F. Moore in adopting Hübner's name for this genus, in preference to *Melanitis* of Fabricius, which has been used by most authors down to Westwood and Felder, but which properly belongs to a genus of *Satyridæ*, of which *Leda* and *Banksia* are the types.

It contains a number of remarkable insects differing in style of colouration, but often resembling species of other families, especially *Danaidæ* and *Morphidæ*. It is somewhat widely distributed, ranging from West Africa to New Guinea; but the bulk of the species are found in the Malay Archipelago, where they are equally distributed between the Indo-Malayan and Austro-Malayan regions. None, however, are yet known from Australia. In the "Genera of Diurnal Lepidoptera," twelve species are given as then known, two being from Africa, two from India, and eight from the Malayan Islands. Several species have since been described by Mr. Hewitson and others; to which I now add eight from my own collection and that of the British Museum, making a total of thirty-one Eastern species.

It is interesting to observe, that the species from the Austro-Malayan Islands form a compact group, distinguished by a regular and somewhat rounded outline of wings, and resembling in colouration some of the broad-winged *Euplœæ*, or the genus *Drusilla;* while the species of India and the Indo-Malayan Islands, are almost always characterised by a more irregular outline, waved, toothed, or even caudate, and generally coloured like species of *Danais*, or the more elongate forms of *Euplœa*.

These are forest-haunting insects, frequenting chiefly damp places where there is a dense herbaceous vegetation. Their flight is slow, resembling that of the *Satyridæ* and *Morphidæ*.

1. Elymnias undularis.

♂. *Papilio undularis*, Fabr. Ent. Syst. iii. pt. i. p. 127; Cramer, 256. A. B.; *Melanitis undularis*, Horsf. Cat. Lep. E. I. C. pl. iii. f. 24, pl. viii. f. 8; *Biblis undularis*, Godt. Enc. Méth. ix. 326.

♀. *Papilio protogenia*, Cramer, 189. F. G.; Fabr. Ent. Syst. iii. pt. i. p. 117; *Elymnias protogenia*, Hübn. Verz. b. Schmett. n. 323; *Biblis protogenia*, Godt. Enc. Méth. ix. 327.

Hab.—Singapore, Malacca, Borneo, Java, Lombock, Flores, Timor (Wall.); N. India (B. M.).

The ferruginous band on the hind-wings is often obsolete, and in a specimen from Borneo, in the British Museum, the blue spots have also almost disappeared. Some females nearly resemble the males, but are more dusky; others are rufous, as in *protogenia*, Cr. Specimens from Ceylon have the rufous band more intense, and in some extending on the margin of the anterior wings, where the blue spots are almost obsolete. This very variable species cannot be separated into its local forms, or races, without much more complete materials than at present exist.

2. Elymnias Esaca.

Melanitis Esaca, Westw. Gen. Diurn. Lep. p. 405; Hewits. Ex. Butt. iii. pl. li. f. 5.

Hab.—N. W. Borneo (Coll. Wall.).

A species with remarkably rounded wings, but in its type of colouration allied to *E. undularis*.

3. Elymnias Dusara.

Melanitis Dusara, Horsf. Cat. Lep. E. I. C. Mus. pl. v. f. 7. ♂.

Female. Like the male, but the pale bands are broader, and somewhat yellower, and contain three or four small pale spots on the hind-wings.

Hab.—Java (Coll. Wall., B. M.).

Mr. Butler identifies *Dusara* of Horsfield with *Panthera*, Fab. (Ent. Syst. iii. pt. i. p. 75). The description, however, does not appear to me sufficiently precise to refer it with certainty to the present species; I therefore retain Horsfield's name, identified by a good figure as well as by typical specimens.

4. Elymnias lutescens.

Elymnias lutescens, Butler, Ann. & Mag. Nat. Hist. 3rd Ser. xx. 404, pl. iv. f. 10. ♀.

Hab.—Malacca, Sumatra (Wall.); Borneo (B. M.).

The female from Sumatra has less red on the upper wings, one from Borneo has the pale bands almost obsolete, while another has them more distinct, especially across the apex of the anterior wings. Males from Borneo are much darker than *E. Dusara*, with the pale band on the hind-wings narrower, and enclosing a row of four or five distinctly ocellate spots.

I was at first disposed to class all these forms as variations of *E. Dusara*, but as that species seems to be very constant in both sexes, with little difference between them, I have thought it better to keep it distinct; while the great variation that occurs in Bornean specimens, and their close approximation to those from Sumatra and Malacca, render it difficult to separate the forms of these islands.

5. Elymnias Mehida.

Melanitis Mehida, Hewits. Ex. Butt. iii. pl. li. f. 2, 3. (♂.)

Hab.—Singapore (Coll. Wall., type).

6. Elymnias Egialina.

Melanitis Egialina, Feld. Nov. Voy. Lep. p. 452, pl. lxi. f. 7, 8.

Hab.—Luzon (Coll. Feld.).

7. Elymnias Thycana, n. s.

Near *E. Egialina*, Felder; rather larger.

Male. Above, anterior wings like *E. Egialina*, but with less white, and the blue tint extending further on the disc; hind-wings with a large ochreish-white patch covering the abdominal region and centre of the wing, the base slightly bluish. Beneath, the anterior wings irregularly blotched, and irrorated with white; hind-wings with a large patch of ochre-yellow, extending to the abdominal margin and continued by paler spots to the inner margin, above and attached to which are two or three dull red spots not extending into the discoidal cell.

Female. Above, paler, with the bluish and white portions more diffused. Beneath, very much whiter, with finer irrorations, and the yellow patch more diffused.

Hab.—India (Coll. B. M., type).

This, and its allies, resemble *Pieridæ*, of the genus *Thyca*.

8. Elymnias borneensis, n. s.

Allied to *M. Egialina*, Felder.

Female. Above, dusky; anterior wings with a slaty transverse band, midway between the end of the discoidal cell and the apex, which is continued by spots to the outer angle; from the lowest spot a stripe goes to the base of the wing, and within the next two spots are shorter yellowish stripes. Hind-wings with a broad yellowish-white band across the centre, from the abdominal margin to the first median nervure; base bluish; a submarginal row of three or four small dusky spots ocellated with bluish.

Beneath, dusky, irrorated with yellowish on the outer half; lower wings with two large reddish spots at the base, the broad central band ochre-yellow, the row of six ocellate spots very distinct, also one towards the base, near the inner margin, and two obscure spots near the apex of the upper wings. Antennæ strongly ringed, dusky, yellow beneath.

Expanse $2\frac{5}{8}$ inches.

Hab.—Sarawak, Borneo (Coll. Wall., type).

9. Elymnias penanga.

Melanitis penanga, Westw. Gen. Diurn. Lep. p. 405. (*nec* Hewitson).

Hab.—Penang (B. M., type).

10. Elymnias sumatrana.

Melanitis penanga, Hewits. Ex. Butt. iii. pl. li. f. 1, 4. (*nec* Westwood.)

Hab.—Sumatra (Coll. Wall., type).

This species is remarkably like *M. penanga,* but as the conspicuous golden-yellow spot on the costal margin of the hind-wings (underside) is entirely absent, and as it also differs in the white patch on the hind-wings above, and in their somewhat more angular outline, I feel compelled to separate it.

11. Elymnias Lais.

Papilio Lais, Cram. 110. A. B.; Fabr. Ent. Syst. iii. pt. i. p. 58; *Biblis Lais,* Godt. Enc. Méth. ix. 326; *Melanitis Lais,* Doub. West. & Hew. Gen. Diurn. Lep.; *Elymnias Lais,* Moore, Cat. Lep. E. I. C. p. 237.

Hab.—Sumatra (Wall. ♂. ♀.), Java, Borneo (B. M. ♂. ♀).

The Java specimens (Cramer's types) agree very closely with those of Sumatra and Borneo in the males. The female is paler and yellower in colour, and rather larger. A female from Sumatra, collected by myself, differs considerably; the markings are much less distinct, of a pale yellowish colour, except at the apex, where they are bluish; and the ground colour is rich brown. This specimen, to some extent, connects this species with *E. Casiphone.*

12. Elymnias Casiphone.

Elymnias Casiphone, Hübn. Samm. Exot. Schmett. iii. pl. 18?

Hab.—Java (Coll. Wall., B. M. ♂).

A species closely allied to *E. Lais,* but of very different colouration.

13. Elymnias Timandra, n. s.

Like *E. Lais;* outline of wings more dentate, especially on the hind-wings.

Male. Above, like *E. Lais,* but the markings broader, and of a rich verditer blue on the upper-wings; beneath, the base of the wings is much darker.

Female. Wings more elongate; markings pale ochre, tinged with bluish on the upper-wings, the tooth at the outer angle of the hind-wings forming a short tail.

Hab.—Sylhet, Moulmein (Brit. Mus., type).

Very closely allied to *E. Lais,* but the different outline of the wings, and distinct colouring, render it necessary to separate it.

14. Elymnias Kamara.

Elymnias Kamara, Moore, Cat. Lep. E. I. C. p. 239.

Hab.—Java (B. M. ♂).

15. Elymnias Ceryx.

Melanitis Ceryx, Boisd. Sp. Gen. Lep. pl. 5*b*. f. 8.

Male. Wings more elongate, with the costa less arched than in *E. Lais;* whitish ash colour, with the veins and the outer margin of all the wings blackish bordered, in the border is a row of white spots which on the upper-wings are larger, ovate, and disposed in a very sinuate line; the anal angle is tinged with ferruginous. Beneath, ferruginous brown, the whitish portions more restricted than above, and the margins beyond the row of spots with coarse white irrorations.

Female. Paler, and less distinctly marked.

Expanse 3-3½ inches.

Hab.—Java (Coll. Wall., B. M.).

The underside of this species is well figured by Boisduval. I obtained specimens in Java, but it appears to be rare.

16. Elymnias leucocyma.

Biblis leucocyma, Godt. Enc. Méth. ix. 326.

Hab.—North India (B. M., Coll. Wall.).

17. Elymnias patna.

Melanitis patna, Westw. Gen. Diurn. Lep. p. 405.

Hab.—India (B. M.).

A fine species, somewhat like *E. leucocyma,* but with spots beneath as in *E. Hewitsoni.*

18. Elymnias Malelas.

Melanitis malelas, Hewits. Ex. Butt. iii. pl. li. f. 6, 7.

Hab.—East India (Coll. Saunders and Hewitson).

Allied to *E. leucocyma,* but differing in the smooth outline of the wings, and the produced outer angle of the hind-wings.

19. Elymnias Vasudeva.

Elymnias Vasudeva, Moore, Cat. Lep. E. I. C. p. 238.

Hab.—Darjeeling (E. I. Museum).

20. Elymnias Hewitsoni.

Melanitis leucocyma, Hewits. Proc. Zool. Soc. 1861, p. 53, pl. ix. f. 34 (*nec Biblis leucocyma,* Godt.).

Hab.—Macassar, S. Celebes (Coll. Wall., B. M.).

Female. Brown, with a purple gloss on the upper-wings, and a white band from the middle of the costa towards the outer angle; under-wings with the white submarginal spots small, and above them a white band from the median vein to the abdominal margin. Beneath; with the white bands less distinct, the spots as in Mr. Hewitson's figure, but smaller. The irroration very coarse and whitish.

This species does not at all agree with Godart's description, which is of an insect closely allied to *E. undularis.* I have therefore named it after Mr. Hewitson, who has so carefully figured it.

21. Elymnias Hicetas, n. s.

Male. Form of *M. Hewitsoni;* the subcostal vein not so close to its second branch as in that species, and the

lower disco-cellular circular instead of elliptical. Above, blackish-purple or brown, a curved band across the apex, continued along the costal and outer margins to the anal angle, pale bronzy-blue; the spots on the hind-wing much smaller and nearer to the margin than in *M. Hewitsoni*, and the two next the outer angle wanting. Beneath, irrorated as in *M. Hewitsoni*, the submarginal spots of the anterior wings absent; on the hind-wings the costal spot much smaller, and the marginal spots as above.

Hab.—Macassar, S. Celebes (Coll. Wall., type).

This fine species is very closely allied to *M. Hewitsoni*, and being from the same locality, was at first considered to be a variety, but a more close examination showed that it differed slightly in many important points, and must be considered as perfectly distinct.

22. Elymnias cumæa.

Melanitis cumœa, Feld. Nov. Voy. Lep. p. 452, pl. lxi. f. 9, 10.

Hab.—Gilolo (Coll. Feld.).

A fine species, very near to *M. Hicetas*.

23. Elymnias Mimalon.

Melanitis Mimalon, Hewits. Proc. Zool. Soc. 1861, p. 52, pl. ix. f. 1, 2 (♂).

Hab.—Menado, N. Celebes (Coll. Wall., B. M.).

24. Elymnias Vitellia.

Papilio Vitellia, Cram. 349. E. F.; Godt. Enc. Méth. ix. 397.

Melanitis stellaris, Vollenh. Tijd. Ent. iv. 159, ♀.

Hab.—Amboyna, Ceram (Coll. Wall., B. M.).

25. Elymnias viminalis, n. s.

Male. Form of *E. Vitellia;* the second branch of the subcostal vein more divergent.

Above, uniform brownish-black, a narrow margin on the anterior, a broad one on the posterior wings, earthy-

brown. Beneath, marked as in *E. Vitellia*, but the spots have a greenish-yellow tinge, and those on the hind-wings are placed nearer the posterior margin.

Hab.—Bouru (Coll. Wall., type).

Very close to *E. Vitellia*, of which it may be considered to be a local modification.

26. Elymnias Cybele.

Melanitis Cybele, Feld. Wien. Ent. Monats. 1860, p. 248.

Hab.—Batchian, Kaioa Is., Ternate (Wall.).

27. Elymnias Melias.

Melanitis Melias, Feld. Wien. Ent. Monats. 1863, p. 120; Nov. Voy. Lep. tab. lxi. f. 11.

Hab.—Bourias, Locban (Philippines).

A remarkable black and white species, resembling an *Euplœa*.

28. Elymnias papua, n. s.

Male. Above, dusky purplish-black, the hind-wings paler towards the outer margin, towards the centre of which are a few groups of pale ochreish scales forming indistinct spots. Beneath, dusky, the margins paler, especially on the lower wings, which have also three bluish-white round spots parallel to the inner margin, and two very minute ones near the outer margin.

Expanse $2\frac{5}{8}$ inches.

Hab.—New Guinea (Coll. Wall., type).

This species closely resembles an *Euplœa*.

29. Elymnias Melane.

Melanitis Melane, Hewits. Proc. Zool. Soc. 1858, p. 465, pl. lv. f. 1, 2, 3, 4, 5.

Hab.—Aru Islands, Ké Islands (Coll. Wall., B. M.).

Males. Mr. Hewitson's fig. 1, represents a male from the Aru Islands; one from the Ké Islands has the whitish band on the hind-wings much broader, and the black spots without ocelli.

Females. Mr. Hewitson's fig. 2, represents one from Ké Islands; another from Aru is much darker, and has the white patch on the anterior wings reduced. Fig. 3 is from the Aru Islands. Fig. 4 is from the Ké Islands.

It is difficult to determine whether the forms from these two islands should be separated. There are some differences in neuration, but a close examination of all my specimens has shown that these are not constant in both sexes. It will, perhaps, be better therefore to leave them together till a more extensive series from both islands may enable us to determine if any constant differences exist.

30. Elymnias Melantho, n. s.

Rather smaller than *E. Melane*, the second branch of the subcostal vein arising further from the end of the cell in both sexes.

Male. Above, purplish-brown-black, apex of the anterior wings slaty-blue, hind-wings with a bluish border and ocelli, as in the less strongly marked specimens of *E. Melane*. Beneath, nearly as in the Aru form of *E. Melane*, but the apex of the upper wings is less distinctly marked.

Female. Dusky, a whitish patch towards the apex of each wing, with an obscure ocellus and one spot on each hind-wing; beneath, as above, with three very dark large ocellate spots on a small patch of rufous-orange.

Hab.—Gagie Is. (West of Waigiou) (Wall., type).

This seems to be an extreme form of *E. Melane*, the most obvious difference is in the whole basal and central portion of the hind-wings beneath in the female being dark, whereas the disc is white in all the forms of *E. Melane* which I have seen.

31. Elymnias Agondas.

♂. *Dyctis Agondas*, Boisd. Voy. Astrol. Ent. p. 138, pl. iii. f. 5.

♀. *Dyctis bioculatus*, Westw. Gen. Diurn. Lep. p. 354, pl. 54*, f. 4 (*nec Morpho bioculatus*, Guér.).

Hab.—New Guinea, Mysol (Wall.).

This species may be readily distinguished from *E. Melane*, by having only one or two ocelli near the anal angle;

as well as by the form and position of the ocelli in the female. In some males, the pale bronze border is dilated on the hind-wings into a broad whitish band. The *Morpho bioculatus* of Guérin, with which the female has been confounded, is a *Drusilla*, which wonderfully resembles it above.

Genus Eurytela, Boisduval.

This essentially African genus is represented in the Malayan Islands by two very well-marked species, both of which appear to be somewhat rare, while it has not yet been found in India, a peculiarity of distribution which is analagous to that of the anthropoid apes.

1. Eurytela Castelnavi.

Eurytela Castelnavi, Feld. Wien. Ent. Monats. 1860, p. 401; Nov. Voy. Lep. tab. lxi. f. 5, 6.

Hab.—Singapore, Borneo (Wall.); Malay Peninsula (Feld.).

A remarkable species, of a deep ultramarine blue, without gloss.

2. Eurytela Horsfieldi.

♂. *Eurytela Horsfieldi*, Boisd. Faun. Ent. Madagasc. p. 54.

♀. *E. Stephensi*, Boisd. *lib. cit.* p. 55.

Hab.—Java.

Though so different in colour, there can be little doubt that these two insects are the sexes of one species, since the structure of the feet shows that the blue are males, and the brown females.

As Boisduval's descriptions are given in a work where they would not be expected to occur, I repeat them here.

"*Eurytela Horsfieldi.* Alis dentatis, supra nigro-cyanescentibus, fascia communi discoidali evanescente dilutiori; subtus fusco-grisea, lineis 4 undulatis fuscis, posticis rotundatis, anticis apice productis."

"*Eurytela Stephensi.* Alis dentatis, fusco-ferrugineis, lineis 4 undulatis fuscis, fasciaque discoidali communi, in anticis interrupta, lutea; subtus pallidioribus, posticis rotundatis, anticis apice productis."

Genus Ergolis, Boisduval.

This genus has been placed by Mr. Moore among the *Nymphalidæ* near *Precis*, some of the species of which are very similar in colouration. Its larva, as figured from Horsfield's drawings, also agrees with the *Junonia* type, but the perfect insect, in the details of its neuration and other characters, is unmistakeably allied to the rest of the *Eurytelidæ*. It seems probable, therefore, that as we know sometimes happens, the larva alone has become modified, so as to resemble a group with which it has no direct affinity.

These are smaller insects than *Elymnias*, and frequent more open situations, fluttering among herbage, and having much the habit of the more active *Satyridæ*. They range from Africa through India to Timor and the Moluccas, and though tolerably abundant in individuals, do not comprise more than a dozen known species.

1. Ergolis Ariadne.

Papilio Ariadne, Linn. Syst. Nat. ii. 778; Fabr. Syst. Ent. p. 507.

Papilio Coryta, Cram. 86. E. F.; *Ariadne Coryta*, Horsf. Cat. Lep. E. I. C. pl. vi. f. 2; *Ergolis Coryta*, Doubl. Gen. Diurn. Lep. p. 411.

Hab.—Sumatra, Java, Borneo, Flores, Timor, Formosa (Wall.); Sylhet, Mysore (B. M.).

The description of Linnæus, "alis angulatis," and his locality "Java," agrees with this species, rather than with the *Merione* of Cramer, with which it has sometimes been confounded.

2. Ergolis Merione.

Papilio Merione, Cram. 144. G. H.

Ergolis Ariadne, Doubl. List Lep. B. Mus. pt. 1, p. 145; Gen. Diurn. Lep. p. 411 (*nec* Linn.).

Hab.—North and Central India.

Distinguished from *E. Ariadne* by its less angular wings, and more zigzag markings. A variety in the British Museum has paler wings, variegated with some yellowish spots.

3. Ergolis luzonia.

Ergolis luzonia, Felder, Nov. Voy. Lep. p. 450.

Hab.—Luzon.

This species seems to be a local modification of *E. Ariadne*, rather larger, with slight differences in the markings, and the subapical white spot nearly or quite obsolete.

4. Ergolis Isæus, n. s.

Outline of wings nearly even, with an angular lobe on the upper-wings, waved striæ somewhat as in *E. Coryta*, but disposed in pairs, no white spot near the apex; on the hind-wings a series of distinct sub-lunulate ring markings, each enclosing an obscure reddish spot.

Beneath, upper wings dusky, the disc reddish-brown, the borders pale, a dusky streak parallel to the outer margin; lower wings pale brown, the markings as above, but the lunulate ring spots smaller, the outer border ashy brown.

The female is like the male, but paler, especially beneath.

Size of *E. Coryta*.

Hab.—Singapore, Sumatra (Coll. Wall., type).

This species has probably been confounded with *E. Coryta*, from which the even outline of the wings, and the absence of the white spot, at once distinguish it.

5. Ergolis taprobana.

Ergolis taprobana, Westw. Gen. Diurn. Lep. p. 410, pl. 68, f. 4.

Hab.—Ceylon (B. M.).

A dark rusty-coloured species, with the upper-wings less angular than in *E. Isæus*.

6. Ergolis timora, n. s.

Male. Above, rich orange-brown.; the outer margins, and the base within a waved line, dusky; the outer edge scallopped, as in *E. Coryta*, but not marked with white, a submarginal waved line bounding the dusky border within, blackish. Beneath, rich brown, the basal half

concentrically marked with dusty white bands, which colour appears also in patches on the outer margins; a distinct white spot near the apex of the upper-wings, as in *E. Coryta*.

Expanse 2 inches.

Hab.—Timor (Wall., type).

7. Ergolis tæniata.

Ergolis tæniata, Feld. Wien. Ent. Monats. 1861, p. 303; Nov. Voy. Lep. pl. lxi. f. 1, 2. ♀.

Hab.—Luzon (B. M.).

A distinct and very handsome species, distinguished by a broad rufous-yellow band on a brown ground-colour.

8. Ergolis adelpha.

Ergolis adelpha, Feld. Wien. Ent. Monats. 1861, p. 303.

Hab.—Mindanao.

Closely allied to *E. tæniata*, but smaller, and the anterior wings more angulate.

2. Ergolis obscura.

Ergolis obscura, Feld. Nov. Voy. Lep. p. 450, pl. lxi. f. 3, 4.

Hab.—"Halmaheira," Gilolo (Felder).

This very distinct species may be at once distinguished from the rest of the genus by its uniformly rounded wings. It is of a dusky colour, and the usual markings are nearly obliterated.

Fam. LIBYTHEIDÆ.

Genus Libythea, Fabricius.

This small group is of world-wide distribution, and like all such, is a frequenter of open grounds, plains, river-banks, and sea-shores, rather than the virgin forest. The species are all small, and in the activity of their motions resemble the lesser *Nymphalidæ*. Dr. Felder places them between the *Erycinidæ* and *Danaidæ*.

1. Libythea Myrrha.

Libythea Myrrha, Godt. Enc. Méth. ix. 171; Hübn. Zutrage, f. 789, 790; G. R. Gray, Lep. Ins. Nepaul, p. 15, pl. xii. f. 4.

Hab.—N. and S. India; Var. Ceylon and S. India (B. M.); Var. Borneo (Coll. Wall.); Java (Godt.).

Varies much in the width of the bands and the size of the spots; specimens from Ceylon and S. India have these very much reduced and paler, the apical spots being nearly white. Specimens which have recently arrived from Borneo, have the wings somewhat less falcate, and less dentate behind, but as the species varies so much, these can hardly be separated.

2. Libythea Lepita.

Libythea Lepita, Moore, Cat. Lep. E. I. C. p. 240.

"Differs from *L. Myrrha* in the ferruginous streak from the base of the fore-wings being divided into two portions" (Moore.).

Hab.—N. India, Bootan (E. I. Mus.).

3. Libythea Narina.

Libythea Narina, Godt. Enc. Méth. ix. 171.

Libythea Neratia, Feld. Nov. Voy. Lep. p. 313.

Hab.—Ceram, Gilolo (Wall. ♂.).

This resembles the African species *L. Labdaca*; Godart's locality, "Java," is, probably, erroneous.

4. Libythea Geoffroyi.

Libythea Geoffroyi, Godt. Mém. Soc. Linn. Paris, ii. Lep. pl. 2; Enc. Méth. ix. 813.

Female. Above, blackish-brown, the basal and anal regions reddish-brown. Anterior wings with four white spots, two transverse near the apex, as in the male but larger, a small oval spot at the end of the cell, and a much larger one below it. Hind-wings with the transverse orange band more distinct than in the male.

Beneath; the spots as above, a basal stripe of dull orange, the apex of the anterior wings and the whole surface of the hind-wings of a reddish-ash colour, with a few blackish irrorations, which form a very obscure interrupted band across the disc.

Expanse 2·2 inches.

Hab.—Timor, Flores (Wall. ♂. ♀).

Godart gives "Java" as the locality of his species, but it is more probable that the specimens came from some of the islands east of it.

5. Libythea antipoda.

Libythea antipoda, Feld. Nov. Voy. Lep. p. 313, pl. xlii. fig. 9, 10.

♂. *Var.* ?. Apex of fore-wings narrow, and rounded as in *L. batchiana*, of hind-wings somewhat toothed at the anal angle, as in *L. ceramensis* and *L. Geoffroyi*; middle disco-cellular vein curved, lower nearly straight.

Above: fore-wings uniform violet, with four black veins, and a narrow dusky border; hind-wings violet, with a broad posterior and abdominal border.

Beneath: fore-wings ochreish-yellow, slightly irrorated at the apex, and with two subapical pale spots as in the allied species; the lower submarginal spot very faintly indicated; hind-wings earthy-brown, irrorated, the whitish bands not very distinct.

Hab.—Macassar (Wall.), Philippine Is.

My Macassar specimen agrees with one from the Philippines, but differs somewhat from Felder's figure and description.

6. Libythea ceramensis, n. s.

Male. Rather larger than *L. Geoffroyi*, upper-wings less abruptly notched. Above, the violet-blue tinge extends over the disc of all the wings, leaving only a dusky border, the white spots and rufous band wanting, the nervures rather broadly dusky. On the underside, the fore-wings have the apical spots as in *L. Geoffroyi*, but the lower spots are replaced by an obscure pale band, and there is no white spot within the cell, which is entirely rufous: the hind-wings are irrorated, blackish-brown, with three curved white bands.

Expanse 2¼ inches.

Hab.—Ceram (Wall., type).

7. Libythea batchiana, n. s.

Male. Very close to *L. ceramensis*, apex of wing more elongate and rounded, and hind-wings less produced at anal angle; the middle and lower disco-cellular veins are

more curved. The dusky margins of the wings are much broader, the veins thicker, and the violet colour darker and confined to the basal portion of the wings. Beneath, the colour is rather paler and the bands on the hind-wings better defined. Rather smaller than *L. ceramensis*.

Hab.—Batchian (Wall., type).

Fam. NYMPHALIDÆ.

Genus Cethosia, Fabricius.

No less than fourteen species of this genus have been recently described by Felder, many of them discovered by myself. I now add one more, bringing up the number of described species to twenty-four, of which the following is a list. With the exception of three Indian and one Australian species, all are found in the Malay Archipelago, and are pretty equally distributed between the Indo-Malayan and Austro-Malayan divisions.

List of the Species of Cethosia.

1. *Biblis*, Cr.	175, A. B.	N. India.
2. *Javana*, Feld.	Nov. Voy. p. 384.	Java.
3. *Mœsta*, Feld.	Nov. Voy. p. 383.	Ceram, Batchian (W.).
4. *Amboinensis*, Feld.	Nov. Voy. p. 382.	Amboyna.
5. *Eurymena*, Feld.	Nov. Voy. p. 384.	Manilla.
6. *Picta*, Feld.	Nov. Voy. p. 381.	Macassar (W.).
7. *Myrina*, Feld.	Nov. Voy. pl. xlviii. f. 3, 4.	Macassar, Menado (W.).
8. *Nicobarica*, Feld.	Nov. Voy. pl. xlviii. f. 7, 8.	Nicobar Is.
9. *Cyane*, Fabr.	Syst. Ent. p. 503.	N. and S. India.
10. *Nietneri*, Feld.	Nov. Voy. p. 380.	Ceylon.
11. *Penthesilea*, Cr.	145, B. C.	Java, Lombock, Timor (W.), India, China.
12. *Hypsea*, Db. & Hew. (=*Æole*, Moo.)	Gen. pl. xx. f. 4.	Java, Borneo (W.).
13. *Hypsina*, Feld.	Nov. Voy. p. 385.	Singapore, Sumatra (W.), Malacca.
14. *Luzonica*, Feld.	Wien. Ent. Mon. vii. p. 107.	Luzon.
15. *Mindanensis*, Feld.	Wien. Ent. Mon. vii. p. 106.	Mindanao.
16. *Cydippe*, Linn.	Clerck, Icon. pl. xxxvi. f. 1.	Amboyna, Ceram (W.).
17. *Bernsteinii*, Feld.	Nov. Voy. p. 379.	Batchian, Gilolo, Morty (W.).
18. *Chrysippe*, Don.	Ins. N. Holl. pl. xxiv. f. 1.	Australia (W.).
19. *Damasippe*, Feld.	Nov. Voy. p. 379.	N. Guinea, Aru, Mysol (W.).

Cethosia—continued.

20. *Cydalina*, Feld.	Nov. Voy. p. 380.	Goram, Matabello, Ké (W.).
21. *Cyrene*, Wall.	*infrà*.	Waigiou (W.).
22. *Lamarckii*, Godt.	Enc. Méth. ix. p. 249.	Timor (W.), Australia (B. M.).
23. *Leschenaultii*, Godt.	Enc. Méth. ix. p. 249.	Timor (W.).
24. *Obscura*, Guér.	Voy. Coquille, pl. xv. f. 4.	New Ireland.

Cethosia Cyrene, n. s.

Male. Near *C. Cydalina* and *C. Damasippe;* anterior wings rather more elongate.

Above: blue-black, the basal red portion well-defined, as in *C. Damasippe*, but browner; the anterior wings with the marginal lunules more distinctly marked, the submarginal white spots largest between the first and second median nervules, decreasing towards the apex, the white patch rather smaller than in *C. Cydalina*, but larger than in *C. Damasippe;* posterior wings with the marginal white lunules distinctly marked, and an inner band of six white quadrate-lunate spots, divided by fine nervures, and each enclosing a triangular black spot. Beneath: it differs from the allied species nearly as above.

Hab.—Waigiou.

This fine species differs at first sight from all its allies by the conspicuous white band on the hind-wings, which is sometimes faintly tinged with rufous. It is certainly as distinct as any others of the *Cydippe* and *Chrysippe* group.

Genus Cirrochroa, Doubleday.

This genus has increased since the date of publication of the "Genera of Diurnal Lepidoptera," from three species to sixteen, given in the following list, including three which I now describe as new. Two inhabit India, and fifteen the Malay Archipelago, nine being found in the Indo-Malay region, three in Celebes, and two in the Papuan Islands. They frequent sunny openings in the forests, and resemble in their flight the genus *Argynnis*.

List of Species of Cirrochroa.

1. *Aoris*, Doubl.	Gen. Diurn. Lep. pl. xxi. f. 2.	N. India.
2. *Thais*, Fabr.	Ent. Syst. iii. pt. i. p. 149.	Java (W.), Moulmein, Ceylon.
3. *Bajadeta*, Moore.	Cat. Lep. E. I. C. p. 150, pl. cxi a. f. 3.	Java.
4. *Malaya*, Feld.	Wien. Ent. Monats. iv. p. 399.	Singapore, Sumatra (W.), Malay Peninsula.
5. *Calypso*, Wall.	*infrà*.	Borneo (Sarawak).
6. *Clagia*, Godt.	Enc. Méth. ix. p. 816.	Java (W.), Singapore (B. M.).
7. *Tyche*, Feld.	Wien. Ent. Monats. v. p. 301.	Mindoro.
8. *Thule*, Feld.	Nov. Voy. pl. xlix. f. 1, 2.	Macassar, Menado (W.).
9. *Fasciata*, Feld.	Wien. Ent. Monats. iv. p. 236, v. p. 301, Nov. Voy. pl. xlix. f. 9, 10.	Mindoro, Sumatra.
10. *Hætera*, Feld.	Nov. Voy. p. 388.	?
11. *Ravana*, Moore.	Cat. Lep. E. I. C. p. 150.	Borneo (W.).
12. *Orissa*, Feld.	Wien. Ent. Monats. iv. p. 399.	Singapore (W.), Malay Peninsula (Feld.).
13. *Satyrina*, Feld.	Nov. Voy. p. 389.	Celebes (Feld.).
14. *Semiramis*, Feld.	Nov. Voy. pl. xlix. f. 3, 4.	Macassar (W.).
15. *Regina*, Feld.	Nov. Voy. pl. xlix. f. 5, 6.	Aru Is. (W.).
16. *Ducalis*, Wall.	*infrà*, p. 340.	New Guinea, Waigiou (W.).

Cirrochroa Calypso, n. s.

Male. Like *C. malaya*, Feld., outline of wings more even, upper-wings not so much elongate.

Above: the nervures not black on the outer half of the wings as in *C. malaya*, the subapical small yellow spot absent, the inner row of lunules on the hind-wings more distant from the margin and less regular than in *C. malaya*.

Beneath: on the anterior wings near the apex are four or five bluish-white lunules, on the hind-wings the transverse band is whiter, narrower, and not suddenly narrowed above the cell as in *C. malaya*; the whole undersurface is of a richer brown, with the lunulate markings yellowish-brown, not dusky edged.

Expanse 2·7 inches.

Hab.—Borneo (Wallace).

Although very close to *C. malaya*, this species is sufficiently distinct both in outline and in characteristic markings.

Cirrochroa Orissa.

♂. Felder, Wien. Ent. Monats. 1860, p. 399.

Female. Differs from the male, above, in being of a more earthy-brown colour, and in the median portion of the upper-wing forming a transverse band of pale brownish-yellow. Beneath, as in the male, but a little paler, and the transverse band on the upper-wings yellowish instead of white.

Hab.—Singapore (Wallace); Malay Peninsula (Feld.).

Cirrochroa ducalis, n. s.

Size and form of *C. regina*, colouration more like *C. Semiramis*.

Male. Above: the purple border is narrower than in *C. regina*, and the basal orange portion of uniform tint as in *C. Semiramis*.

Beneath: the ground colour is more rufous than in *C. regina*, the basal half rufous-orange tinged with pearly-violet, the silvery-white band is straighter with more even edges, and the waved submarginal band is rufous-orange on all the wings, and narrower than in *C. regina*.

Hab.—New Guinea, Waigiou (Wallace).

This is a well-marked local form, which it seems desirable to distinguish from *C. regina*, a species peculiar to the Aru Islands.

Genus Terinos, Boisduval.

This beautiful genus contained but a single species from its establishment in 1836 to 1862, when Mr. Hewitson described four new ones, two of which were collected by myself. Felder and Butler have since each described a species, and I now add two more, bringing the number up to nine, of which the following is a list:—

List of the species of Terinos.

1. *Clarissa*, Boisd.	Sp. Gen. pl. ix. f. 4.	Java, Borneo, Singapore (W.).
2. *Nympha*, Wall.	*infrà*, p. 342.	Borneo (W.).
3. *Robertsia*, Butl.	Ann. Nat. Hist. 3rd Ser. xx. pl. viii. f. 2-4.	Malacca, Sumatra (W.).
4. *Viola*, Wall.	*infrà*, p. 343.	Singapore, Sumatra (W.).
5. *Terpander*, Hewits.	Proc. Zool. Soc. 1862, p. 90.	Borneo.
6. *Taxiles*, Hewits.	*l. c.* p. 89, pl. x. f. 3, 4.	Batchian, Gilolo (W.).
7. *Abisares*, Feld.	Nov. Voy. p. 386.	Celebes (W.).
8. *Teuthras*, Hewits.	Proc. Zool. Soc. 1862, p. 89.	East India.
9. *Tethys*, Hewits.	*l. c.* p. 88, pl. x. f. 1, 2.	Mysol (W.).

The most striking characteristics of these insects are the hairy eyes, and the large plush-like scales which, in the males, form a large patch on both wings, but which are often replaced in the females by blue bands and patches, giving this sex the aspect of a distinct species. Still more remarkable, however, is the great difference of neuration presented by the sexes in some of the species. Mr. Hewitson pointed out the variation in the position of the lower disco-cellular vein in relation to the second branch of the median vein, whereby closely allied species may readily be distinguished. This is undoubtedly the case; but by examination of four species of which I possess both sexes, I find that the difference between the neuration of the sexes is fully as great as between that of the most distant species. I find also by measurement and comparison, that the disco-cellular vein retains a constant position, so that the length of the cell does not vary, and that it is the branches of the median vein that alter their position, being, in some cases, very much further from the base of the wing than in others. In *T. Clarissa* the sexual difference is perceptible, but slight. In *T. Robertsia* and *T. Taxiles* it is very easily seen, as in the male the second median branch springs from the same point as the lower disco-cellular, while in the female it comes almost exactly midway between the first and second branch. In *T. Abisares* the difference is still more marked, since in the male the disco-cellular arises in advance of the second median branch, while in the female it is nearly midway between them. This is a remarkable illustration of Darwin's law, that when a particular character varies sexually, it also varies specifically. As a rule, differences of neuration are generic, rarely

varying much from closely-allied species to species. Here we have them as a sexual distinction; and we also find them varying in an unusual degree from species to species. It is also very interesting to remark, that in the two species, *T. Robertsia* and *T. Viola*, the Singapore variety is more highly coloured, and has the branches of the median veins more distant from the base of the wing than in the more rufous-tinged Sumatran specimens, showing a remarkable correlation between local modifications of tint, and what are usually important and stable structural characters.

Terinos Nympha, n. s.

Male. Form nearly as in *T. Clarissa*, but the outer margin of the upper-wings rather less hollowed, and that of the lower-wings considerably less angulate.

Above: colour as in *T. Clarissa*, but the velvety patch extends higher across the upper discoidal vein, while it does not extend so far towards the base of the wing; position of the lower disco-cellular nervure as in *T. Taxiles*. The orange-rufous patch on the hind-wings contains no dark lunular markings, but has a bluish submarginal line, most distinct near the anal angle, and the velvety patch at the outer angle extends fully half-way up the inner margin.

Beneath: the markings are very similar to those of *T. Clarissa*, but there is a broad terminal band of pearly-pinkish-white on the hind-wings.

Expanse 2·9 inches.

Hab.—Sarawak.

Distinct in form, neuration and colouring from the closely-allied *T. Clarissa*.

Terinos Robertsia.

Butler, Ann. & Mag. Nat. Hist. 3rd Ser. vol. xx. p. 399, pl. viii. figs. 2, 3, 4.

Hab.—Malacca (Roberts); Singapore (Wallace).

In this form the disco-cellular meets the median vein a little nearer the base than the origin of its second branch.

Local form. A.

Hab.—Sumatra (Wallace).

Browner, with the blue portions more violet, and the white posterior spots replaced by rufous. The disco-cel-

lular meets the median vein at the origin of its second branch.

These two forms are so much alike that, notwithstanding the difference of neuration, I hardly like to separate them.

Terinos Viola, n. s.

Male. Form of *T. Clarissa*, but the apex of the anterior wings rather broader and more angulate, the hind-wings a little more caudate.

Above: violet or violet-brown, the velvety patch extending over the upper discoidal vein on the anterior wings. Hind-wings rich violet-blue, or brown tinged with violet, a velvety patch at the outer angle as in *T. Clarissa*, a pale white or brownish patch on the outer margin, and a submarginal dusky or bluish waved line.

Beneath: rufous-brown, with waved brown markings on the basal portion of the wings, the hind-wings with a pale submarginal band enclosing a broad zigzag rufous-yellow line, within which are four rufous spots.

Expanse 3·5 inches.

Hab.—Singapore, Sumatra (Wallace).

Distinguished at once by its angular form and peculiar colouration. The Sumatra specimen is less deeply coloured than that from Singapore, and the lower disco-cellular meets the median vein a little beyond the origin of its second branch, while in the darker Singapore form the two meet at the same point. The two forms are, in other respects, so much alike, that I hesitate to separate them.

Genus Atella, Doubleday.

I describe one new species of this small and simply-coloured genus, which now contains nine Eastern species, as in the following list:—

1. *Phalanta*, Drury.	India, Java, Timor, Macassar.
2. *Alcippe*, Cram.	Ceram, Batchian, Gilolo.
3. *Celebensis*, Wallace.	Celebes.
4. *Aruana*, Feld.	Aru Is., Mysol.
5. *Sinha*, Kollar.	Singapore, Sumatra, Java, Timor, N. India.
6. *Egista*, Cram.	Amboyna, Bouru, Batchian, Morty, N. Guinea.
7. *Fasciata*, Feld.	Sumatra.
8. *Gaberti*, Guér.	Taiti.
9. *Egestina*, Quoy and Gaim.	Guam.

These insects frequent sunny open places, and resemble in appearance and habits the genus *Melitæa*.

Atella celebensis, n. s.

Near *A. Alcippe;* costa rather more curved, and outer edge straighter.

Male. Above: on the anterior wings the submarginal lunules are less defined and thicker, that at the outer angle forming an elongate spot; the inner band of spots is farther from the margin and less regular, and there is a third row of small lunulate marks which is barely indicated or altogether wanting in *A. Alcippe;* the basal markings are also more distinct. On the hind-wings the black costal margin is divided throughout by a rufous line, the transverse line across the disc and the basal markings are more distinct.

Beneath: the spots and black markings are paler than in *A. Alcippe,* and the pale submarginal band enclosing the row of spots is a little broader.

Female. The spots and markings rather broader and less defined than in the male, the median band edged with a line of violet-pink, somewhat as in *Messaras Mœonides.*

Expanse 2·1—2·4 inches.

Hab.—Macassar (Wallace).

This species appears sufficiently distinct from *A. Alcippe,* and the appearance in the female of the fine violet colour of a Celebesian species of the allied genus *Messaras,* is very remarkable.

Genus Laogona, Boisduval.

I possess two new species of this small genus, which brings up the number to six, ranging from India to New Guinea. These are strong and active insects, frequenting sunny places on the skirts of the forests.

List of Species.

1. *Hippocla*, Cram.	Java, Celebes, Moluccas.
2. *Hylæus*, Wall.	New Guinea.
3. *Hypatia*, Wall.	Java.
4. *Hypselis*, Godt.	India.
5. *Lilæa*, Hewits.	India.
6. *Hippalus*, Feld.	Gilolo.

Cramer's type of *L. Hippocla* is from Amboyna. The specimens from Celebes differ considerably in marking, and may be distinct. The females of these are brown, but paler than the males. The Indian form, with a white female, is probably distinct, and has not yet been named.

Laogona Hylæus, n. s.

Male. Allied to *L. Hippocla;* outline of wings more even, except the portion between the short tail and the anal angle, which is more regularly scallopped.

Above: nearly as in *L. Hippocla,* but the apical and upper marginal spot wanting on the anterior wings; on the hind-wings the two transverse rufous bands are confluent, leaving a broad black margin without any submarginal line.

Beneath: the markings are similar to *L. Hippocla,* but rather more diffused.

Expanse 1·8 inch.

Hab.—Dorey, New Guinea (Wall.).

Laogona Hypatia, n. s.

Male. Form of wings nearly as in *L. Hippocla,* the outline a little more even.

Above: the markings are nearly as in *L. Hippocla,* but the rufous band and markings are all enlarged, and have a very irregular outline, especially on the anterior wings.

Beneath: quite distinct from *L. Hippocla:* the ground colour whitish ochre, veined in a complicated net-work with deep rusty brown; near the middle of the outer margin on the upper-wings is an elongate blackish spot with a blue centre, enclosed on its inner side with a horseshoe and a lunule of the ground colour; on the outer margin of the hind-wings is a row of brown spots enclosed by a double row of lunules on each side, the two central spots are violet-ash powdered with black, while the lateral ones consist of a brown ring with a whitish centre.

Expanse 1·9 inch.

Hab.—Java (Wallace).

On the under side this insect is somewhat intermediate between *L. Hippocla* and *L. Hypselis.*

Genus Junonia, Hübner.

The Eastern species of this genus are often variable. The common *J. Orithyia* appears to vary on the islands from the continental form, the females differing much more markedly from the males. An extreme form of the female from the Moluccas is that figured by Vollenhoven as *Junonia Royeri*. The following species from the island of Timor is very distinct.

Junonia timorensis, n. s.

Outline of *J. Aonis*, but the anterior wings a little more sinuate and more prominently dentate.

Male. Above: rich fuscous-brown, the base and outer margins rufous, a narrow band of three ochre-yellow spots across the apex of the anterior wings, the markings in the cell and the submarginal ocelli as in *J. Aonis*, but much less distinct; hind-wings with a triple ocellus towards the outer angle, the middle one large, next to this a small one, and another of medium size next the anal angle.

Beneath: dark bronzy-brown, the band of four spots and one nearer the apex white, the ocelli nearly as above, but more distinct; on the hind-wing these are placed on a band of a more bronzy colour, beyond which is a pale ash coloured margin with two narrow dusky lines.

Female. Like the male, but paler, and the white band across the apex wanting beneath.

Expanse 2·3 to 2·5 inches.

Hab.—Timor (Wallace).

Genus Cyrestis, Boisduval.

This is one of the most elegant genera of butterflies, and the species are remarkable for their habit of settling frequently on the bare earth and rocks, with the wings spread out flat, so as fully to display their beautifully pencilled markings. I obtained seven new species in the Malay Archipelago, five of which have been already described by Felder and Butler. I now offer descriptions of the other two, one closely allied to *C. nivea*, and the other to *C. Paulinus*, but sufficiently distinct. This brings the number of described species to twenty, ranging from India to New Guinea.

Cyrestis Nais, n. s.

Very near *C. nivea*, but distinguished from it by many minute differences of form and marking. On the upper wings the median vein is more abruptly arched beyond its second branch; on the hind-wings, the outer angle is more prominent, and the tails are vertical instead of divergent.

Male. Upper side: the space between the two first cellular strigæ is blue instead of brown, the orange spot at the outer angle is margined on the inner side with blue lunules, and the inner marginal streak coincides on the two wings, forming a regular curved unbroken line, just within which is a streak of slaty-blue, with a metallic gloss.

Beneath: the markings are much darker than in *C. nivea*, and the ground colour is of a more bluish-pearly tint; a rufous tinge extends more or less along the middle of the marginal band on both wings.

Expanse 2·1 inch.

Hab.—Timor (Wallace).

The continuous marginal strigæ on both wings, and the less divergent tails, at once distinguish this species from its very close ally *C. nivea*.

Cyrestis Seneca, n. s.

Very near *C. Paulinus*, compared with a female of which the differences are as follows:

Female. Above: the dusky border is much wider, having a very narrow oblique white band, which is still further reduced by a faint dusky line just within it; all the wings have a very fine submarginal black line, which is finely edged with white on the anterior wings, while on the hind-wings it is placed on a narrow white border, with a dusky edge within the white fringe; there is an interrupted white line, very faint on the upper-wings, just beyond the row of dusky ovate white-ringed spots.

Beneath: the dusky margin is much paler than in *C. Paulinus*, the black submarginal line is equally defined as above, and the two central lunules of the posterior band are considerably smaller than the others. The tails are longer than in *C. Paulinus*.

Expanse 2·6 inches.

Hab.—Sula Island, Celebes group (Wallace).

A local form of *C. Paulinus*, but differs in characters which in that species seem constant in a large number of specimens.

Genus Parthenos, Hübner.

This genus consists of three large and handsome butterflies of the Malay Archipelago, all tolerably abundant in the islands they inhabit, but not easy to obtain in fine condition.

1. *P. Gambrisius*, Fabr.	India, Malacca, Sumatra, Borneo (Wall.).
2. *P. Sylvia*, Cram.	Java, Celebes, Sula Is., Batchian, Ceram, Ké Islands (Wall.); Penang (Cantor).
3. *P. tigrina*, Voll.	New Guinea, Mysol, Waigiou (Wall.).

Parthenos tigrina.

♂. Vollenh. Tijd. Ent. 1866, p. 210, pl. x. fig. 2.

Female. Differs only in having the submarginal lines and longitudinal stripes faintly indicated on the black ground. In one specimen from New Guinea, the pearly white spots are obsolete, while the markings on the outer half of the wings are a little more distinct.

Expanse 3·9 inches.

Hab.—New Guinea, Mysol, Waigiou (Wallace).

Genus Euripus, Doubleday.

Euripus robustus, n. s.

Much larger than *E. Halitherses*, the median tooth of the hind-wings shorter and more oblique, the anal tooth wanting.

Male. Above: brown-black, on the anterior wings a marginal and submarginal row of elongate spots, in pairs, dusky and indistinct, basal and discal spots arranged as in *E. Halitherses*, but less defined. Hind-wings with the

basal half white, divided by narrower black veins than in *E. Halitherses;* a row of very small white spots in pairs close to the margin, and an inner row of linear spots also in pairs.

Beneath; dusky, the markings nearly as in *E. Halitherses,* a large elongate blackish patch parallel to the inner margin of the anterior wings, the spots on and near which are bluish and violet.

Expanse 3·1 inch.

Hab.—Tondano, N. Celebes (Wallace).

A very distinct species of this curious little genus.

Genus Apatura, Fabricius.

Apatura macar, n. s.

Near *A. Parisatis,* but larger, and the anal angle less produced.

Male. Above: deep bronzy-brown, paler towards the margin, which is regularly dentate, the intervals white-edged; a brown-black submarginal line, within which is a row of lunulate markings, more distinct on the hind-wings, which have an oval black spot, orange-ringed, near the anal angle; on the anterior wing is a row of five or six white points parallel to the outer margin.

Beneath: bronzy-reddish-brown, spots in the discoidal cells nearly as in *A. Parisatis,* the median transverse band pale brown, the anal and submarginal spots as above, but the third and sixth white points are enclosed in black spots, the latter the largest.

Female. Dark brown, the outer half paler, more or less tinged with rusty-orange; an irregular band of white spots well-defined on the inner edge, begins about the middle of the costa at the subcostal vein, and forming a broken curve on the anterior wings, passes in a straight line to about the middle of the abdominal margin; the other spots and markings are the same as on the underside of the male.

Beneath, nearly as above, but paler.

Expanse, ♂, 2·4 inches; ♀, 2·5 inches.

Hab.—Macassar (Wallace).

XXII. *On the Australian species of* Tetracha. By Edwin Brown.

[Read 5th July, 1869.]

Specimens of the Australian species of the genus *Tetracha* have hitherto been very rare in European collections. Baron Chaudoir in his "Catalogue de la Collection de Cicindélètes," published in 1865, only mentions one species which he possessed from Australia. A recent importation, however, of specimens, has afforded me the opportunity of examining several species, which were previously unknown in this country. Gemminger and Harold, in Vol. i of their "Catalogus Coleopterorum," issued in 1868, notice the following species of *Tetracha* as from Australia.

Australasiæ, Hope . .	Port Essington.
australis, Chaud. . .	Nov. Holl.
basalis, McLeay . .	Port Denison.
Bostockii, Castel. . .	Nov. Holl.
crucigera, McLeay . .	Port Denison.
Hopei, Castel. . . .	Nov. Holl.
humeralis, McLeay . .	Port Denison.
scapularis, McLeay . .	Port Denison.
Waterhousei, Castel. . .	Nov. Holl.

McLeay remarks that of these species, *T. humeralis*, *scapularis*, *crucigera*, and *Australasiæ*, resemble each other in being more or less margined with yellow. To this group may also be added, as they are margined in like manner, *T. Hopei* and *Bostockii*, and probably also *T. basalis*, but of the last-mentioned species I have not yet seen the description.

The species mentioned in the paragraph, as above, will, therefore, stand as follows:—

Section I. *Elytra margined with yellow.*

Tetracha humeralis, . .	McLeay.
T. Hopei, ...	Castel.
T. scapularis, . . .	McLeay.
T. Bostockii, . . .	Castel.
T. crucigera, . . .	McLeay.

The identity of *Australasiæ*, of Hope, has still to be ascertained, as, apparently, specimens do not exist under that name in Australia. Count de Castelnau suggests that *Australasiæ*, of Hope, is identical with *crucigera*, of McLeay; but he remarks that the insect figured by White under the name *Australasiæ*, in the Voyage of the 'Beagle,' is certainly the *humeralis* of McLeay. Unfortunately, Hope's description of *Australasiæ* is so imperfect, that the question cannot be decided from that alone. The specimens under the name of *Australasiæ* in the British Museum, are, I believe, from recollection, identical with *humeralis*. An examination of the original Hopeian specimen, now at Oxford, is requisite to set the matter at rest. The name, however, had better be dropped altogether.

Of the Australian species of *Tetracha*, mentioned by Gemminger and Harold, there remain the *australis*, of Chaudoir, and *Waterhousei*, of Castelnau, neither of which is margined with yellow; but these are undoubtedly two names for one and the same species; and as Baron Chaudoir's name has priority of date, it must be used in preference to the other. The second section will stand thus:—

Section II. *Elytra tipped, but not margined, with yellow.*

Tetracha australis, Chaud. = *Waterhousei*, Castel.

The recorded species are consequently reduced to seven. I have now, however, to mention an eighth, and new species, said to be from Champion Bay, in Western Australia, of which I possess two male specimens.

The characters are as follow:—

Section III. *Elytra wholly green.*

Tetracha pulchra, n. sp.

♂. Length 7-8 lines; breadth of elytra 3 lines.

In shape, more cylindrical than any of the other Australian species with which I am acquainted.

Elytra brilliant golden-green, the sutures metallic blue; coarsely punctured at the base, the punctures gradually

reduced in size until near the apex, where they become obsolete; the usual subapical line of pits well defined. Thorax wholly golden-green, with blue and purple reflections on the disc and sides. Head the same in colour. The abdomen has the basal segments green, the apical segment yellow at the tip, pitchy at the base, the second, third, and fourth from the apex, pitchy, the last mentioned green at the sides. Legs: thighs chesnut brown; tibiæ and tarsi obscure yellow, with the tips of all the joints stained with brown. Antennæ yellow. Jaws long and powerful, yellow; teeth black.

I may remark that all the Australian species of *Tetracha* have a peculiar *facies*, which at once distinguishes them from the species from America. They are broader, and more robust insects; and they all possess a well defined longitudinal subsutural line of pits, situate at about one-fourth of the width of the elytron from the suture, curving outwardly as it approaches the apex. This line of pits does not exist at all in those American species which I possess, or if there be any trace of it, it is only in very close proximity to the suture. The Old World species *T. quadrisignata* and *euphratica*, both possess the line of pits above mentioned, and they further agree in shape with their Australian relations. Sooner or later the Old World species must be arranged in a genus by themselves, throwing *T. Boccandei* into the genus *Megacephala*, to which it more properly belongs. The generic limits will then accord with geographical habitats, as ought always to be the case where nature will permit.

XXIII. *On the Diurnal* Lepidoptera *described in Gmelin's Edition of the* Systema Naturæ. By W. F. Kirby.

[Read 1st November, 1869.]

Gmelin's edition of Linnæus' *Systema Naturæ* contains a considerable number of new species of Diurnal *Lepidoptera*, most of which were previously described at greater length (but without names) by Zschach, in the Entomological portion of the *Museum Leskeanum*. These names and descriptions are never quoted, and therefore it may not be useless to give full descriptions of all such species as have not yet been satisfactorily identified, and indications of the others. The remains of Leske's collection are in the Museum of the Royal Dublin Society, but the greater number of the specimens have succumbed to the ravages of time and neglect. Nevertheless I have succeeded in recovering several of the types, most of which I have been able to identify, with the kind assistance of Mr. Hewitson. A few of the more obscure or damaged types I had not time to work out when in the neighbourhood of London; and one or two types which I had overlooked were detected after my return to Dublin. These latter, however, are of slight importance. Most of the types are numbered, and are therefore certain; but a few were incorrectly numbered, or not marked at all; wherever the smallest doubt about a type exists, it is indicated in the following pages.

Our collection is not sufficiently large for me to attempt to identify those species of which no types exist; but I quote Gmelin's names and Zschach's descriptions in full, hoping that if publicity is given to them, others may be enabled to do so. Unfortunately Zschach gives no localities, simply noting "europæus" or "exoticus," which will increase the difficulty of applying his descriptions.

It will be seen that in most cases Gmelin's names are merely synonyms, but in some instances they have priority, and a full claim to be restored.

I take the species in the order in which they occur in Gmelin, and where they have been satisfactorily identified, the names by which they will henceforth, in accordance with the law of priority, be known, are printed in capitals, and referred to the modern genera.

The references for Gmelin are to Linn. Syst. Nat. I. v. (ed. 13; 1788-1791): for Zschach to "Musei Leskeani Pars Entomologica," (Leipsic; 1788; three coloured plates)

PAPILIO.

* Equites.

† † Achivi.

1. *P. Argyrios*, Gmel. p. 2248.

P. E. A. alis dentatis, supra nigris, anticis fasciis duabus argenteis, postica nebulosa, subtus cœruleo-argenteis fasciis duabus, apice margineque postico unitis, fuscis, striæ transversæ, cœruleo-argenteæ versus basin, utrinque ad marginem crassiorem, alis posticis dentatis, dente intermedio reliquis longiore, supra fascia latiori argentea, maculisque 7 cœruleo-argenteis, lineola transversa interruptis ad marginem posticum; subtus cœruleo-argenteæ, in medio maculis tribus transversis æneis, unaque remota ad marginem internum, fasciisque duabus nigris, prima undata, altera dentata, margineque postico nigro, albo maculato, inter fasciam posticam et marginem maculæ cœruleo-argenteæ, anticis lineolis nigris interruptæ, maculæ tres dentatæ, nigræ, ad marginem internum versus angulum ani; abdomen subtus luteum. *Exoticus.* (Zschach, p. 87, n. 6.)

* * Heliconii.

2. *P. Sectator*, Gmel. p. 2250.

P. alis primoribus supra fuscis, fascia dilatiore transversa, posterioribus nigris, posterius albo cæruleoque punctatis.

Meerb. Afb. t. 10.

Habitat —— (Gmel.)

A reference to Meerburgh (Afbeeldingen van zeldzaame gewassen; Leyden; 1775) would probably fix this species.

* * * Parnassii.

3. *P. hyalinus*, Gmel. p. 2259.

P. Par. alis rotundatis, posticis caudatis, fusco-hyalinis, anticis fascia lineari, obsoleta, subtus alba; posticis supra

basi cœrulescente, stria undata, nigra, terminata ocellis duobus nigris, pupilla alba, adjacente utrinque macula alba, aliisque dispersis circiter 15 albis, cœruleo-insidentibus; subtus fascia dimidia, annexa circulo macularum 6 albarum, punctulisque duobus; ocelli duo vividiores, antico majore. *Exoticus.* (Zschach, p. 88, n. 26.)

Probably a species of *Hætera*, or of one of the allied genera.

* * * * Danai.

† Candidi.

4. Pieris Isse.

Papilio Isse, Cram. Pap. Ex. pl. 55, E. F. (1779), pl. 339, C. D. (1782).

Papilio bicolor, Gmel. p. 2261 = *Pap.* No. 31, Zschach, p. 88.

5. Pieris discors.

Papilio discors, Gmel. p. 2261 = *Pap.* No. 32, Zschach, p. 88.

Papilio Plexaris, Donov. Ins. N. Holl. (1805).

Cathœmia Anthyparete, Hübn. Verz. p. 92 (1816).

Pieris Philyra, Godt. Enc. Méth. ix. 159 (1819).

6. Pieris Dorimene.

Papilio Dorimene, Cram. Pap. Ex. pl. 387, C. D. (1782).

Papilio fuliginosus, Gmel. p. 2261 = *Pap.* No. 34, Zschach, p. 88.

7. *Papilio chrysopterus*, Gmel. p. 2261.

P. D. C. alis rotundatis, utrinque flavis, anticis margine antico, postico latius nigris, intus sinuato; posticis margine postico nigris, subtus omnibus totis flavis. *Exoticus.* (Zschach, p. 89, n. 35.)

Almost certainly a species of *Terias;* but impossible to identify by the description.

† † Festivi.

7. Euplœa Phænareta.

Papilio Phœnareta, Schaller, Naturf. xxi. 177, pl. v (1785).
Papilio affinis, Gmel. p. 2289=*Pap.* No. 46, Zschach, p. 89.
Terpsichrois Alea, Hübn. Verz. p. 16 (1816).
Danais Prothoe, Godt. Enc. Méth. ix. 177 (1819).

The type of Zschach, No. 46, is evidently the *Prothoe* of Godart; but Gmelin's name *affinis* cannot stand, as Mr. Butler and I have independently discovered that the *Phœnareta* of Schaller is identical with *Prothoe*, and Schaller's description was prior to Gmelin's.

8. Danaus Limniace.

Papilio Limniace, Cram. Pap. Ex. pl. 59, D. E. (1779).
Papilio exoticus, Gmel. p. 2289=*Pap.* No. 46b, Zschach, p. 89.

9. *Papilio claviger*, Gmel. p. 2289.

P. D. F. alis subintegris, fuscis, maculis punctisque albis, hyalinis, basi anticis longis, posticis radiatis, clavatis, marginibus posticis duplici serie punctorum alborum, subtus concolores. *Exoticus*. (Zschach, p. 89, n. 46c.)

The apparent type of this insect is very similar to, but not quite identical with, our specimen of *Danaus Juventa*, Cram.

10. Drusilla Urania.

Papilio Urania, Linn. Mus. Lud. Ulr. p. 225 (1764).
Papilio marinus (misprint for *murinus*), Gmel. p. 2289=*Pap.* No. 47, Zschach, p. 89.

The type agrees with the figure (*Papilio Jairus*) in Donovan's Insects of China.

11. Euplœa leucostictos.

Papilio leucostictos, Gmel. p. 2289=*Pap.* No. 48, Zschach, p. 90.

Limnas mutabilis Nemertes, Hübn. Samml. Ex. Schmett. i. (1806-1816).

Danais Eunice, Godt. Enc. Méth. ix. 177 (1819).

12. *Papilio hexophthalmos,* Gmel. p. 2289.

P. D. F. alis subcaudatis, integerrimis, basi fulvis, anticis margine antico, præter basin, posticoque late nigro, maculis duabus fulvis, arcuque 5 punctorum albo-rum, subtus cinereo griseoque variæ, striga transversa, fusca, antice dentata, serieque punctorum, quorum sex ocelli obsoleti, alis posticis margine postico late nigris, ad angulum ani cauda brevi instructis, subtus striga fusca, et utrinque ocellis duobus nictitantibus. *Exoticus.* (Zschach, p. 90, n. 49.)

This belongs to the genus *Doleschallia,* of Felder, and Mr. Hewitson thinks that it may possibly be a female variety of *D. Bisaltide* (*Papilio Bisaltide,* Cram. pl. 102, C. D.) ; but it is much larger than the ordinary form of that species.

13. Siderone strigosa.

Papilio strigosus, Gmel. p. 2290=*Pap.* No. 55, Zschach, p. 90.

Siderone Zethus, Westw. in Dbl. & Hew. Gen. Di. Lep. p. 321, note (1850).

* * * * * Nymphales.

† Gemmati.

14. Diadema Pandarus.

Papilio Pandarus, Linn. Mus. Lud. Ulr. p. 198 (1764).

♀ *Papilio lacteolus,* Gmel. p. 2290=*Pap.* No. 58b, Zschach, p. 90.

15. *Papilio bifasciatus,* Gmel. p. 2290.

N. G. alis angulatis, fuscis, subtus cinereis, strigis duabus communibus, fuscis, fasciaque lata, cinerea, com-muni, postice dentata, in qua series ocellorum fundo fusco, priorum 5 intermediis majoribus, posticarum sex, pupilla alba, iride lutea. *Exoticus.* (Zschach, p. 91, n. 59).

One of the *Satyrinæ*. A fragment of one of the types is still in existence; but I have not yet succeeded in identifying it.

†† Phalerati.

16. *Papilio Sulpitia*, Gmel. p. 2336.

N. P. alis dentatis, concoloribus, atris, subtus fuscis, anticis disco punctulis duobus albis, uno pone alterum, pone discum duo paria macularum albidarum, punctaque 7 ad marginem posticum, subtus basi linea alba, bis interrupta, ad marginem posticum series gemina lunularum albarum; alæ posticæ fascia e maculis 7 albis punctulisque tribus, postice versus marginem anticum, subtus eadem fascia serieque triplici lunularum albarum ad marginem posticum. *Exoticus*. (Zschach, p. 92, n. 88.)

17. *Papilio Vidua*, Gmel. p. 2336.

N. P. alis dentatis, nigris, anticis macula magna, ovata, oblique posita, ad apicem minore alba, pellucida, subtus basi luteæ, punctis tribus albis, ad marginem anticum, margo posticus bis lunulatus; alis posticis disco albo, pellucido, lunula rufa, tribusque cœruleis ad angulum ani, subtus basi luteo-fuscis, puncto nigro, in medio fascia lata, alba, lunula nigra, ad marginem anticum dein fascia lutea, punctis ferrugineis, margo posticus cœruleus, striis duabus nigris, undulatis, extrema albo-sinuata. *Exoticus*. (Zschach, p. 92, n. 89.)

****** Plebeji.

† Rurales.

18. *Papilio Barbarus*, Gmel. p. 2352.

P. alis ecaudatis cærulescentibus, subtus undique fusco maculatis; ocellis posterioribus duobus.

Habitat Algiriæ, *Argiolo* minor. (Gmel.)

A species of *Polyommatus*, which the locality will perhaps aid in identifying.

19. *Papilio annulatus,* Gmel. p. 2359.

P. R. alis caudatis, cœrulescentibus, anticis macula fusca, annulo cœruleo, margineque postico fusco, posticis margine antico, subtus cinerascentibus, lineis tribus transversis, undatis, albis ad marginem posticum, punctoque ani gemino, fulvo, disco nigro. *Exoticus.* (Zschach, p.93, n. 123.)

A species of *Thecla.* The type has not yet been identified.

20. *Papilio oculatus,* Gmel. p. 2359.

P. R. alis ecaudatis, supra fuscis, disco cœruleis, maculis obsoletis, atris, subtus fusco-canis, punctis ocellaribus, disco lunula, area primoribus 5-6, posticis 8, ad basin unico, marginalibus 6 plerumque obsoletis. *Europæus.* (Zschach, p. 93, n. 131.)

21. *Papilio lunulatus,* Gmel. p. 2359.

P. R. alis ecaudatis, fuscis, disco cœrulescentibus, obsolete maculatis, subtus fusco-cinereis, disco lunula arcuque punctorum ocellarium, priorum 5, posticarum 7. *Europæus.* (Zschach, p. 93, n. 132.)

If the expressions "maculis obsoletis" and "obsolete maculatis," occurring in this and the preceding description, may be considered to indicate that these two species belong to the *Arion* group, their identification will be easy; otherwise I fear we can hardly expect to recognize them among the mass of European species of *Polyommatus.*

† † Urbicolæ.

22. *Papilio Æthiops,* Gmel. p. 2360.

P. U. alis integris atris, prioribus supra fasciis tribus fenestratis albis, maculisque cœruleis, ad angulum posticum, posticis basi striis duabus longitudinalibus, pallidis, strigaque transversa 5 punctorum cœruleorum, sinus externus internusque apicis albi, subtus basi fasciæ duæ transversæ, pallidæ, antica communi, dein duæ cœruleæ, sinus albidæ; collare punctis 4 albis, thorax fasciis 4 longitudinalibus, internis cœruleis, externis pallidis; abdomen nigro luteoque annulatum, linea dorsali nigra. *Exoticus.* (Zschach, p. 94, n. 154.)

A species unknown to Mr. Hewitson. The type having lost its antennæ, the genus cannot be ascertained from it with absolute certainty; probably it is a *Pyrrhopyga*.

23. *Papilio bipunctatus*, Gmel. p. 2360.

P. U. alis integris, fuscis, anticis utrinque fascia obliqua, argentea, punctisque duobus minimis ad marginem anticum, posticis subtus basi fascia striaque lutescente. *Exoticus*. (Zschach, p. 94, n. 160.)

The type of this species is in existence, and I hope to be able to verify it.

24. *Papilio fenestratus*, Gmel. p. 2360.

P. U. alis integris, fusco-luteis, disco punctis fenestratis tribus, versus apicem ad marginem anticum tribus minoribus. *Exoticus*. (Zschach, p. 95, n. 161.)

The type of this is so broken that there is but little chance of verifying the species.

Zschach quotes Linnæus and Fabricius, but not Cramer or any other authors; in fact, he would seem to have been quite unacquainted with Cramer's work, as it will be noticed that he redescribes several species figured in Pap. Exot.

I may add that Leske's collection was purchased for the Royal Dublin Society at the end of last century. The *Lepidoptera Heterocera* are all destroyed or seem unrecognizable. There are, however, a good many *Coleoptera*, &c., still in existence.

XXIV. *Descriptions of New Genera and Species of* Hispidæ; *with notes on some previously described species.* By J. S. Baly, F.L.S.

[Read 15th November, 1869.]

List of new species.

1.	*Leptispa Godwini* . .	Shanghai.
2.	*Callispa proxima* . .	Siam.
3.	,, *brevicornis* . .	Penang.
4.	,, *Brettinghami* .	India.
5.	,, *tarsata* . .	India.
6.	,, *Mouhoti* . .	Cambodia.
7.	*Cephaloleia approximata* .	Upper Amazons.
8.	,, *laticollis* .	Peru.
9.	,, *Amazona* .	Upper Amazons.
10.	,, *dimidiaticornis*	Peru.
11.	,, *nigriceps* .	Peru.
12.	,, *truncatipennis* .	Upper Amazons.
13.	,, *cognata* . .	Bahia.
14.	,, *apicicornis* .	Rio Janeiro.
15.	,, *flavipennis* .	Ecuador.
16.	*Hispodonta elegantula* .	Amboyna.
17.	*Promecotheca Reichii* .	Vavao.
18.	*Botryonopa cyanoptera* .	Borneo.
19.	,, *imperialis* .	Philippine Isles.
20.	*Estigmena terminalis* .	Tondano.
21.	*Downesia atrata* . .	India.
22.	,, *tarsata* . .	Hongkong.
23.	*Aspidispa* (n. g.) *tibialis* .	Gilolo.
24.	*Gonophora nigriceps* . .	Penang.
25.	,, *apicipennis* .	Ceylon.
26.	*Chæridiona* (n. g.) *metallica*	India.
27.	,, *picea* . .	India.

Note. The numbers appended to the insects described in the present paper, refer to the "Catalogue of Hispidæ," and indicate the position that the species now described ought to take in relation to those contained in that work.

Genus Leptispa, Baly.

(Sp. 5.) *Leptispa Godwini.*

Filiformis, subcylindrica, nigra, nitida, thorace subquadrato, disco utrinque excavato, ad latera confertim, dorso remote, foveolato-punctato, punctis irregulariter congregatis et minoribus interspersis; elytris thorace vix latioribus, parallelis, paullo ante apicem angustatis, apice ipso rotundato, sat fortiter punctato-striatis, striis leviter sulcatis, interspatiis nonnullis ad latera costatis.

Long. 3 lin.

Hab.—Shanghai.

Antennæ equal in length to the head and thorax, moderately robust, very slightly thickened towards the apex. Thorax subquadrate, scarcely broader than long, sides straight and parallel from the base to beyond the middle, thence rounded and converging to the apex; above transversely convex, irregularly but not very closely punctured. Elytra scarcely broader than the thorax, sides parallel, apical border dilated, slightly reflexed.

The species above described agrees closely in size and form with *Leptispa abdominalis;* it may be known by its much coarser punctuation, and its entirely black colour.

Genus Callispa, Baly.

(Sp. 2a.) *Callispa proxima.*

Anguste oblonga, subdepressa, nigra, nitida, supra nigro-cærulea, pedibus nigro-piceis, tarsis fulvis; thorace disco subremote et tenuiter punctato, ad latera subcrebre varioloso, lateribus a basi ad apicem rotundato-angustatis; elytris antice sat profunde, postice minus fortiter punctato-striatis, striis ad apicem sulcatis, interspatiis ad latera convexiusculis; fronte antrorsum angulato-producta.

Long. 3 lin.

Hab.—Siam, Mountains of Laos; collected by the late M. Mouhot.

This species stands very close to *Callispa Bowringii;* its antennæ are rather more slender, their first and third joints being also shorter with relation to the second; the sides of the thorax are more regularly rounded; and lastly, the colour of the surface of the body is much more obscure, the blue being strongly tinged with black.

(Sp. 2b.) *Callispa brevicornis.*

Anguste oblonga, fere parallela, subdepressa, nigra, nitida, abdomine fulvo, supra metallico-cærulea; thorace lateribus a basi ultra medium oblique convergentibus, hinc ad apicem rotundato-angustatis, dorso transversim convexo, disco distincte, ad latera variolose punctato; elytris ante medium minus fortiter, pone medium subtenuiter punctato-striatis, striis ad apicem vix sulcatis, margine laterali confuse punctato; fronte obtusa, antrorsum non producta; antennis brevibus.

Long. $2\frac{3}{4}$ lin.

Hab.—Penang.

Very similar in colour and punctuation to *Callispa Bowringii*, but the legs are entirely black; it may be easily known by the short antennæ, which do not exceed the head and thorax in length; the sides of the thorax are also rather less rounded; in other respects it is almost entirely similar.

(Sp. 5a.) *Callispa Brettinghami.*

Anguste oblonga, subdepressa, rufo-testacea, nitida, antennis nigris; thorace ad latera foveolato-punctato; elytris cyaneis, profunde punctato-striatis, striis apicem versus et ad latera sulcatis, interspatiis ad latera convexiusculis; fronte antrorsum angulato-producta.

Long. $3\frac{1}{2}$ lin.

Hab.—India; collected by Mr. Brettingham.

Antennæ about one-third the length of the body, tapering from base to apex, third joint distinctly longer than the first two united; three lower joints sometimes obscure rufous; frontal projection acute. Thorax twice as broad at the base as long, sides straight and slightly converging from the base to the middle, thence broadly rounded and converging to the apex; upper surface broadly excavated on either side, coarsely variolose-punctate, disc less closely and less strongly punctured; scutellum transverse, its apex obtuse; elytra scarcely broader than the thorax, oblong, obtusely rounded at the apex, deep metallic blue with a purplish reflection, frequently stained at the base with rufous.

(Sp. 5b.) *Callispa tarsata.*

Anguste oblonga, subdepressa, sanguinea, nitida, antennis nigris, tarsis fuscis; thorace utrinque ad latera late excavato, varioloso-punctato, punctis disci medio minoribus, sparse hic illic congregatis, lateribus a basi longe ultra medium rectis; elytris sat profunde punctato-striatis, punctis apicem versus minus fortiter impressis, striis ad apicem sulcatis, interspatiis ad latera convexiusculis; fronte antice truncata, medio in cretam brevem abrupte producta.

Long $3\frac{2}{3}$ lin.

Hab.—India; collected by Mr. Brettingham.

Very nearly allied to *Callispa Brettinghami*, of which species I at first considered it a variety; but on closer examination, I find it differs in the following structural characters; third joint of the antennæ not longer than the first two united; front obtuse, abruptly produced in the middle into a short longitudinal ridge, which runs downwards on the face; sides of the thorax straight from the base to far beyond the middle, thence abruptly narrowed and rounded to the apex; scutellum not broader than long, pentagonal. It is possible that, coming from the same locality, it may be the ♀ of *C. Brettinghami*, but not knowing the sexual characters of the present genus and the tarsi being equally broad in both forms, I am, for the present, obliged to consider it distinct.

(Sp. 5c.) *Callispa Mouhoti.*

Subelongata, subdepressa, parallela, rufo-fulva, nitida, antennis rufo-fuscis; thorace utrinque ad latera depresso, disco remote et tenuiter, lateribus variolose punctato, lateribus a basi vix ultra medium rectis, hinc ad apicem rotundato-angustatis; elytris rufo-fuscis, cæruleo-nitentibus, antice sat profunde, postice minus fortiter punctato-striatis, striis ad apicem sulcatis, interspatiis ad latera leviter convexiusculis; fronte obtuse angulata.

Long. 3 lin.

Hab.—Cambodia; collected by the late M. Mouhot.

Closely allied to the two preceding; the third joint of the antennæ not longer than the two basal joints united; front produced into an obtuse angle; thorax less coarsely

punctured; intermediate in form between the two species, the sides being straighter than in *C. Brettinghami*, but more broadly rounded in front than in *C. tarsata;* elytra less coarsely punctured than in either species; scutellum scarcely longer than broad, pentagonal.

Genus Alurnus, Fabr.

Alurnus Batesii, Baly.

A specimen of this beautiful species, until now unique in the collection of Mr. Bates, has been brought to this country from Ecuador by Mr. Buckley; it is now in my cabinet.

Alurnus Saundersii, Baly.

A single specimen of this insect was also taken by Mr. Buckley; it differs from the type in wanting the narrow black border at the apical margin of the elytra.

Alurnus Cupido, Thomson.

Since the publication of my "Catalogue of *Hispidæ*," I have seen many specimens of this insect; they all agree both in the persistence of the strong coloration of the elytra, and also in having these latter relatively shorter and broader than in *A. bipunctatus*, under which species I had placed *Cupido* as a variety; I have now no hesitation in considering it a good species. I have received a specimen, agreeing in all respects with those from the Amazons, collected at Bahia by Mr. Reed.

Alurnus Cassideus, Westwood.

Several specimens of this species have been received from the Upper Amazons (Pebas); Prof. Westwood gives Mexico as the locality of his insect. The black markings on the elytra appear to vary considerably.

Genus Cephaloleia, Blanch.

(Sp. 7a.) *Cephaloleia approximata.*

Elongata, subdepressa, flavo-fulva, nitida, oculis antennisque (his basi excepta) nigris; thorace subcrebre

punctato, lateribus a basi paullo ultra medium rectis, parallelis; elytris thorace paullo latioribus, parallelis, apice rotundatis, tenuiter punctato-striatis, striis apicem versus leviter sulcatis, interspatiis ad latera leviter convexiusculis, punctis ad apicem fere deletis.

Fem.: abdominis segmento anali apice bisinuato; pygidii apice obtuse angulato.

Long. 2½ lin.

Hab.—Upper Amazons.

Antennæ rather longer than the head and thorax, moderately robust, seven upper joints black, the apices of the third and fourth also remotely edged with the same colour; second joint equal in length to the third. Thorax about one-fifth broader than long, sides straight and parallel from their base to a short distance beyond the middle, thence rounded and converging to the apex; upper surface transversely convex, sides distinctly but narrowly reflexed, disc remotely, sides and base more closely impressed with distinct round punctures. Elytra broader than the thorax, parallel, finely but distinctly punctate-striate, the striæ on the sides and hinder half of the elytra slightly sulcate.

C. Salléi is the only previously described species with which the present insect can be confounded; it may be however at once known by the shorter third joint of the antennæ, the somewhat narrow and more closely punctured thorax, and by the more finely punctured elytra; in *C. Salléi* the elytra are much more strongly punctured, the punctures being of equal size, and equally impressed over the whole surface of the elytra.

(Sp. 9a.) *Cephaloleia laticollis.*

Oblonga, parallela, depressa, rufo-fulva, nitida; antennis apice, oculisque nigris, antennarum articulo secundo distincte tertio breviori; thorace elytris æquilato, lateribus rectis, angulis anticis fere rectis, acutis, disco remote, lateribus subcrebre punctato; elytris tenuiter punctato-striatis, interspatiis tenuissime punctatis.

Mas.: abdominis segmento anali medio modice rotundato-emarginato.

Fem.: abdominis segmento anali apice leviter bisinuato.

Long. 2 lin.

Hab.—Upper Amazons, Peru.

Very closely allied to *Cephaloleia dilaticollis*, the ♂ being very difficult to separate from the ♂ of that species; it may, however, be known by its somewhat narrower and slightly less depressed form, by the more closely and distinctly punctured sides of the thorax, and by the more distinctly rounded apices of the elytra; the anal segment is also rather less deeply, but at the same time more broadly, rotundate-emarginate; the ♀ may be at once separated by the bisinuate apex of the anal segment of the abdomen. In both sexes the second joint of the antennæ is distinctly shorter, taken in relation to the third joint, than in *C. dilaticollis*.

(Sp. 9b.) *Cephaloleia Amazona.*

Elongata, parallela, subdepressa, nigra, nitida, abdomine obscure fulvo- aut nigro-piceo; thorace rufo-fulvo, elytris fere æquilato, lateribus fere rectis, angulis anticis rectangulis; elytris tenuiter punctato-striatis, punctis apicem versus fere deletis.

Mas: abdominis segmento anali late subangulato-emarginato.

Fem.: abdominis segmento anali bisinuato.

Long. 2½-3 lin.

Hab.—Upper Amazons.

Antennæ less than half the length of the body, entirely black, basal joint slightly thickened, rather longer than the second. Thorax very similar in form to that of *C. laticollis*, nearly equal in width to the elytra, sides straight and slightly diverging along their hinder two-thirds, thence also straight but slightly converging to the anterior angles, the latter rectangular; the middle portion of the anterior margin distinctly produced; upper surface transversely convex, concave on the sides, lateral margin reflexed; surface impressed with distinct round punctures. Elytra scarcely broader than the thorax, parallel, obtusely rounded at the apex, finely punctate-striate, the whole surface very finely and irregularly wrinkled.

The greater length of body, and entirely different coloration, will distinguish this insect from either *dilaticollis* or *laticollis*, the only two known species of the genus with which it agrees in form of thorax.

(Sp. 11a.) *Cephaloleia dimidiaticornis.*

Elongata, parallela, subdepressa, rufo-fulva, nitida, antennis extrorsum nigris; thorace longitudine paullo latiori, lateribus parallelis, disco remote, ad latera subremote punctato; elytris thorace latioribus, parallelis, apice conjunctim rotundatis, tenuiter punctato-striatis, striis ad apicem fere deletis.

Mas: abdominis segmento anali late sed leviter emarginato, medio sinuato.

Fem.: abdominis segmento anali late sed leviter emarginato.

Long. 2 lin.

Hab.—Peru.

Antennæ half the length of the body, five upper joints black, third joint distinctly longer than the second. Thorax about a fifth part broader than long, sides narrowly but strongly reflexed, straight and parallel, the extreme apex quickly rounded and converging, the anterior angles obtuse; above transversely convex, distinctly punctured, the puncturing distant on the disc, rather more crowded at the sides. Elytra parallel, conjointly rounded at the apex, finely but distinctly punctate-striate, the punctures nearly obsolete towards the apex of the elytra.

The smaller size and narrower form will distinguish this species from its allies *C. nigricornis* and *proxima*.

(Sp. 11b.) *Cephaloleia nigriceps.*

Elongata, subparallela, subdepressa, rufo-fulva, nitida, capite nigro; thorace longitudine vix latiori, ad latera subcrebre, disco remote punctato; elytris parallelis, apice rotundatis, tenuiter punctato-striatis.

Mas: abdominis segmento anali late quadrato-emarginato, medio sinuato.

Long. 2½ lin.

Hab.—Peru.

Head and antennæ black, the latter moderately robust, nearly half the length of the body, the third joint very slightly longer than the second. Thorax rather broader than long, sides slightly diverging forwards, straight from the base nearly to the apex, thence quickly rounded

and converging to the anterior angles, the latter obtuse; upper surface transversely convex, sub-variolose-punctate on the sides, more finely and remotely punctured on the disc, a central space on the latter nearly free from punctures; lateral border reflexed. Elytra broader than the thorax, narrowly sub-ovate, their apices conjointly rounded, above finely punctate-striate, the puncturing near the apex nearly obsolete, interspaces flat; on the outer disc below the shoulder is a broad but ill-defined longitudinal groove. Knees indistinctly stained with piceous.

C. nigriceps may be at once known, from all similarly coloured species, by its black head.

(Sp. 11c.) *Cephaloleia truncatipennis.*

Elongata, parallela, dorso depressa, rufo-fulva, nitida, antennis (basi exceptâ) nigris; thorace transverso, remote et subtenuiter punctato; elytris thorace paullo latioribus, fere parallelis, apice truncatis, dorso depressis, tenuiter punctato-striatis.

Fem.: abdominis segmento anali obtuse truncato.

Long. 3 lin.

Hab.—Upper Amazons: collected by Mr. Bates.

Antennæ rather more than a third the length of the body, black, the first three joints rufo-fulvous, third joint slightly longer than the second. Thorax distinctly transverse, sides strongly reflexed, straight and slightly converging from the base nearly to the apex, thence quickly rounded and converging to the anterior angles, the latter obtuse; above transversely convex, excavated on the sides just within the reflexed lateral border; remotely but distinctly punctate, the punctures rather closer at the base and sides. Elytra broader than the thorax, sides subparallel, obliquely rounded and converging near the apex, the latter broadly truncate; upper surface broadly flattened along the suture, sides obliquely excavated below the humeral callus; finely punctate-striate, punctures entirely obsolete near the apex of the elytra; the middle third of the outer disc impressed near the outer border with a broad ill-defined longitudinal fossa.

The truncate apices of the elytra, together with the obtuse anal segment in the ♀ (the only sex known to me), without difficulty separate this species from its congeners.

(Sp. 11d.) *Cephaloleia cognata.*

Elongata, depressa, pallide fulva, nitida, antennis (basi excepta) nigris; thorace subquadrato, remote punctato, lateribus rectis; elytris thorace latioribus, parallelis, apice obtuse rotundatis, sat fortiter punctato-striatis, punctis apicem versus minus fortiter impressis, interspatiis planis, iis ad latera obsolete convexis, uno infra callum humerale costato.

Fem.: abdominis segmento anali apice bisinuato.

Long. 2½-3 lines.

Hab.—Bahia.

Antennæ half the length of the body, basal joint nearly as long as the second and third united, the third half as long again as the second, the two lower joints rufous, the following two nigro-piceous, the rest entirely black. Thorax scarcely broader than long, sides straight and parallel, rounded and converging at the extreme apex; disc transversely convex, remotely impressed with round punctures, sides narrowly but strongly margined, reflexed. Elytra broader than the thorax, parallel, obtusely rounded at the apex, rather more broadly margined than in the allied species; upper surface slightly flattened at the extreme base between the shoulders; sides oblique and excavated below the humeral callus; distinctly punctate-striate in front, the punctures smaller and less strongly impressed behind the middle; interspaces on the inner disc plane, those near the outer border slightly convex, the interspace below the humeral callus distinctly costate for nearly half its length; fourth and fifth striæ from the outer border rather deeply impressed along their middle third.

(Sp. 11e.) *Cephaloleia apicicornis.*

Elongata, parallela, subdepressa, sordide flava, subnitida, subtus nitida; antennis apice oculisque nigris; thorace longitudine distincte latiori, lateribus rectis, dorso hic illic punctis rotundatis fortiter impresso; elytris thorace latioribus, parallelis, apice rotundatis, dorso prope suturam complanatis, punctato-striatis, punctis apicem versus minus distincte impressis, interspatiis ad latera convexiusculis.

Mas: abdominis segmento anali apice concavo-emarginato.

Fem.: abdominis segmento anali apice late sed leviter emarginato, bisinuato.

Long. 2½ lin.

Hab.—Rio Janeiro, New Friburg.

Antennæ half the length of the body, slender, basal joint moderately thickened, more than half as long again as the second, three upper joints black. Thorax slightly broader than long, sides straight and parallel, rounded at the extreme apex, anterior angles slightly produced, obtuse; upper surface transversely convex, lateral margin strongly reflexed; surface impressed with deep round punctures. Elytra broader than the thorax, parallel, conjointly rounded at the apex; upper surface flattened along the suture, sides obliquely excavated below the humeral callus, causing it to appear laterally prominent; distinctly punctate-striate, the punctures near the apex less strongly impressed; interspaces near the lateral margin indistinctly convex, the third from the outer border more strongly raised than the rest.

C. apicicornis is very closely allied to *C. cognata*, but may be known by the much paler colour and more closely punctured thorax; from *C. nigricornis*, Fabr., both species are separated by the different emargination of the anal segment.

(Sp. 13a.) *Cephaloleia flavipennis.*

Elongata, parallela, nigra, nitida; thorace transverso, fortiter punctato; elytris flavis, thorace latioribus, fere parallelis, apice obtusis, distincte punctato-striatis, punctis piceis.

Fem.: abdominis segmento anali apice truncato.

Long. 3¼ lin.

Hab.—Ecuador; collected by Mr. Buckley.

Antennæ moderately robust, scarcely half the length of the body, basal joint moderately thickened, about a third part longer than the second. Thorax one-fifth broader than long, sides straight and parallel, rounded and converging at the apex; upper surface transversely convex, deeply but not very closely punctured on the

disc, a longitudinal space thereon being free from punctures; the sides more closely punctured, lateral border reflexed. Elytra moderately convex, nearly parallel, distinctly but not strongly punctate-striate, the punctures piceous; interspaces plane, obsoletely convex near the lateral margin.

Genus Hispodonta, Baly.

(Sp. 3.) *Hispodonta elegantula.*

Elongato-ovata, subdepressa, nigra, nitida, femoribus anticis (dorso excepto) elytrisque læte fulvis; his ad suturam striatim, disco exteriori confuse punctatis, vittâ suturali (basi abbreviatâ) apiceque nigris; thorace subremote sed fortiter punctato.

Long 4-5 lin.

Hab.—Amboyna.

Antennæ half the length of the body. Thorax not broader at the base than long, sides slightly converging from the base towards the apex, the extreme apex abruptly rounded; above, transversely convex, disc slightly excavated just in front of the basal margin; surface subremotely impressed with large deep round punctures. Elytra broader than the thorax, narrowly ovate; sides distinctly margined, the apex of each elytron obliquely truncate; surface rather strongly punctured; a common sutural stripe, and a large patch at the apex, black; this latter covers nearly the hinder fourth of the surface, and sends a branch upwards on the outer disc, which is abbreviated anteriorly some distance below the middle of the disc.

Genus Promecotheca, Blanch.

(Sp. 6a.) *Promecotheca Reichii.*

Angustata, subcylindrica flava, nitida, tarsis pallide piceis, abdomine, mandibulis, oculis antennisque (harum articulo basali excepto) nigris; elytris fortiter punctato-striatis, metallico-cæruleis, tertia parte antica flava.

Long. $3\frac{1}{2}$-$4\frac{1}{2}$ lin.

Hab.—Vavao.

Antennæ two-thirds the length of the body in the ♂, rather shorter in the ♀, slender, filiform, black, the basal

joint flavous, the second and third, in the ♂, pale piceous. Thorax much longer than broad, moderately constricted at the base, sides slightly but distinctly swollen in front of the constriction; surface smooth and shining, impunctate. Elytra parallel, regularly rounded at the apex, their anterior third flavous, the remaining portion metallic blue.

This insect may possibly be a variety of *P. cæruleipennis*, Blanch.

Genus Botryonopa, Blanch.

(Sp. 5.) *Botryonopa cyanoptera.*

Elongata, parallela, dorso depressa, rufa, nitida; antennis (basi excepta) nigris; thorace opaco, foveolato-punctato, ante apicem declivi, lævi; elytris cyaneis, sat profunde punctato-striatis, interspatiis subrugoso-reticulatis.

Long. 7½ lin.

Hab.—Borneo.

Antennæ more than half the length of the body; shining black, one or two basal joints rufous. Thorax rather broader than long, sides narrowly margined, parallel from the base to beyond the middle, thence obliquely converging and slightly rounded to the apex; above opaque, moderately convex, deflexed in front, impressed just in front of the base with a short broad transverse fossa, from the anterior edge of which a faint longitudinal groove runs forwards in the medial line as far as the base of the deflexed portion; hinder three-fourths of the disc covered (the medial line excepted) with large oblong punctures. Elytra parallel, acutely rounded at the apex, each notched at the sutural angle, and armed with an acute tooth. Thighs obsoletely toothed beneath.

(Sp. 6.) *Botryonopa imperialis.*

Anguste elongata, parallela, dorso depressa, nigra, nitida; thorace foveolato-punctato, ante medium declivi, lævi, disco medio longitudinaliter carinato, utrinque transversim sulcato; elytris apice conjunctim subacutis, profunde punctato-striatis, cyaneis; femoribus unispinosis, anticis paullo incrassatis; tibiis anticis extus ante apicem dente parvo armatis.

Long. 10½ lin.

Hab.—Philippine Islands.

Front impressed with a deep groove, which ends on the vertex in a transverse sulcation. Thorax at the base not broader than long, sides narrowly margined, nearly parallel from the base to just beyond the middle, thence obliquely converging to the apex; immediately in front of the base is a small indistinct tooth; upper surface sub-opaque, its anterior third deflexed, impunctate, hinder two-thirds transversely convex, impressed on either side in front with a broad transverse depression, which extends laterally as far as the outer margin; on the medial line is a faint longitudinal groove, terminated anteriorly at the base of the deflexed portion by a small shining tubercle; hinder part of the thorax (with the exception of a broad longitudinal space on the middle) deeply punctured. Elytra elongate, parallel, sides obliquely converging near the apex, the latter conjointly subacuminate; each elytron emarginate at the sutural angle, and armed with a short acute tooth.

Genus Estigmena, Hope.

(Sp. 2.) *Estigmena terminalis.*

Elongata, parallela, convexa, dorso depressa, fulvo-flava, nitida; oculis, antennis (basi excepta), elytrorumque dimidio postico, nigris; elytris fortiter punctato-striatis, interspatiis costatis.

Long. 4½ lin.

Hab.—Tondano; collected by Mr. Wallace.

Antennæ scarcely more than a third the length of the body, basal joint flavous, the apical one obscure nigro-fuscous. Thorax longer than broad, sides straight and parallel, rounded at the extreme apex; upper surface smooth and shining, deeply excavated on either side close to the lateral border, impressed in front of the basal margin with a large round fovea; the excavated portions coarsely punctured. Elytra broader than the thorax, sides parallel; apex subacutely rounded; upper surface flattened along the suture, deeply punctate-striate; striæ sulcate, their interspaces costate.

Genus Downesia, Baly.

(Sp. 2.) *Downesia atrata.*

Filiformis, subcylindrica, nigra, nitida; thorace latitudine paullo longiori, modice transversim convexo, sparse sed distincte punctato; elytris profunde punctato-striatis, utrisque tricostatis.

Long. $3\frac{1}{4}$ lin.

Hab.—India; collected by Mr. Brettingham.

Antennæ scarcely longer than the head and thorax, slightly increasing in thickness towards the apex. Thorax narrowly margined, sides straight and parallel, obliquely narrowed at their extreme apex, apical margin slightly produced. Elytra scarcely broader than the thorax; sides straight and parallel, their apex regularly rounded; upper surface of each with three strongly raised longitudinal costæ, the sutural and lateral borders also costate, interspaces each with a double row of large deeply-impressed punctures; on the middle portion of the outer, the anterior four-fifths of the inner, and on the extreme base of the middle interspaces, the double rows of punctures become single.

(Sp. 3.) *Downesia tarsata.*

Filiformis, subcylindrica, flava, nitida; antennis, oculis tarsisque nigris; thorace latitudine paullo longiore, tenuiter punctato, modice transversim convexo; elytris sat profunde punctato-striatis, utrisque tricostatis.

Long. 3 lin.

Hab.—Hong Kong.

Thorax slightly longer than in the preceding, sides straight, obsoletely sinuate, nearly parallel, only slightly converging from the base to within a short distance of the apex, where they suddenly converge to the apex itself; apical margin slightly produced; upper surface finely and subremotely punctured. Elytra sculptured as in the last species.

The two insects now described differ from the type of the genus (*Downesia insignis*, Cat. Hisp. p. 107) in having the fourth joint of the tarsus of normal length, and not elongate; there is also a slight difference in the length of the joints of their antennæ; but I do not consider these characters of sufficient importance to authorize the formation of a new genus; in habit, and in all other respects, they agree entirely with the typical form.

Genus Aspidispa.

Corpus sub-ovatum, postice paullo subdepressum. *Caput* obtusum, inter antennas in cretam elevatam antrorsum productum; *antennis* filiformibus, corporis dimidio longitudine fere æqualibus, ad apicem vix attenuatis, articulo primo incrassato, ob-ovato, secundo ovato, primo vix breviori, tertio paullo elongato; *mandibulis* apice obtusis; *mento* oblongo; *ligulâ* segmento basali integro. *Thorax* transversus. *Elytra* thorace multo latiora, subcordata, lateribus basi rotundato-ampliatis, hinc apicem versus oblique angustatis, apice conjunctim rotundatis; dorso subdepressa, hic illic profunde excavata; utraque bicostata, costis valde interruptis, interspatiis profunde biseriatim punctatis, interstitiis transversim costatis. *Pedes* breves, antici ♂ valde incrassati; *tibiis* anticis trigonatis; *tarsis* quatuor anticis latis, anticis ♂ transversim ampliatis; *unguibus* articulo penultimo æquilongis, illo fere occultis.

This very singular form resembles closely the genus *Hoplionota*, and at first I had considerable doubt whether it really belonged to the present family; but M. Boheman, to whom I showed it, at once pronounced it to be one of the group of *Hispidæ*. It must stand close to *Gonophora*.

The mentum differs in form in the two sexes; in the ♂ its anterior surface is deeply concave; in the ♀ it is plane and raised towards the apex into a longitudinal ridge.

Aspidispa tibialis.

Sub-ovata, subdepressa, fulva, nitida, supra (facie antennisque exceptis) nigro-cærulea, vertice utrinque, thoracis lateribus vitta submarginali, scutelloque rufo-piceis; thorace transverso, hic illic rude punctato, basi arcuatim sulcato, lateribus obtuse rotundatis, minute serratis; elytris subcordatis, thorace multo latioribus, basi rotundato-ampliatis, hinc apicem versus rotundato-angustatis, apice conjunctim rotundatis, dorso hic illic late et profunde excavatis, utrisque tricostatis, costis interruptis, interspatiis profunde biseriatim punctatis, interstitiis hic illic transversim elevatis.

Mas: pedibus anticis valde incrassatis.

Long. 2 lin.

Hab.—Gilolo.

Antennæ not quite half the length of the body, slender, filiform. Thorax nearly twice as broad as long, sides distinctly margined, nearly straight and slightly diverging from the base to beyond the middle, then broadly rounded to the apex, outer edge finely serrate; disc convex, excavated on the sides, base impressed with a broad semilunate sulcation; scattered irregularly over the disc are some large deeply impressed punctures. Elytra much broader at the base than the thorax, shoulders rotundate-ampliate, sides converging thence towards the apex, the apex itself regularly rounded; upper surface of each elytron with three raised longitudinal costæ; their interspaces each with a double row of punctures; the interstices between the punctures are also thickened, and form irregular transverse costæ; on the surface of the disc are a number of large irregular excavations, which obliterate not only the costæ, but to a great extent the punctures themselves; lateral border moderately dilated at the shoulders, gradually narrowed towards the apex of the elytra, outer border very finely serrulate, the serrations being only visible under a lens.

Genus Gonophora, Baly.

(Sp. 3a.) *Gonophora nigriceps.*

Elongata, subparallela, nigra, nitida; antennis robustis, subfusiformibus; femoribus anticis quatuor basi facieique macula pallide fulvis, thorace dorso elytrisque rufo-fulvis, illo vittâ elevatâ interruptâ lateribusque ante medium nigris; elytris utrisque tricostatis, interspatiis profunde biseriatim punctatis, margine laterali modice dilatato, medio vix ampliato.

Long. 5-6 lin.

Hab.—Penang.

Very close to *Gonophora Saundersii*, separated from that species by the narrower and more parallel lateral margin of the elytra, and also by the interspaces on the disc having each (the middle one at the base excepted) a double row of punctures.

(Sp. 5a.) *Gonophora apicipennis.*

Elongata, postice vix ampliata, dorso subdepressa, fulva, subnitida, subtus nitida; oculis, antennis, metathorace,

abdomine pedibusque nigris; thorace rugoso, basi transversim sulcato, disco vittis brevibus elevatis tribus, duabus exterioribus obliquis, instructo; elytris apice nigris, utrisque tricostatis, interspatiis triseriatim punctatis.

Long. 5½ lin.

Hab.—Ceylon.

Antennæ nearly half the length of the body, third joint slender, elongate; head shining, forehead impressed with a deep fovea; eyes and mandibles black. Thorax rather broader at the base than long; sides straight, converging from base to apex, feebly bisinuate, notched at the apex, hinder angles acute; surface closely rugose, deeply impressed at the base with a transverse groove; on the middle of the disc are placed three short shining elevated vittæ, the two outer ones oblique. Elytra broader than the thorax, slightly dilated posteriorly, the apex regularly rounded; upper surface flattened along the suture, the apical third entirely black; each elytron strongly tricostate, the basal margin also thickened; three inner interspaces, as well as the hinder half of the fourth, each with a treble row of punctures; anterior half of the fourth interspace impressed with a double row only. Thorax stained on either side beneath with an oblong black vitta; anterior pair of thighs each with an oblong fulvous patch in front.

Genus Chæridiona.

Corpus oblongum aut subcuneiforme. *Caput* inter oculos productum, antice angulatum; *antennis* dimidio corporis longioribus, robustis, 11-articulatis, articulis cylindricis, duobus basalibus brevibus, longitudine fere æqualibus, primo paullo incrassato; *palpis* maxillaribus articulo primo minuto, duobus sequentibus brevibus, æqualibus, ultimo cæteris longitudine æquali; *mento* oblongo, lateribus constricto; *ligulâ* menti dorso insertâ, segmento basali obsoleto, segmento apicali magno, subquadrato, mento latiori; *palpis* labialibus obsoletis. *Thorax* subcylindricus, anguste marginatus, angulis anticis in dentem productis. *Elytra* thorace multo latiora, postice paullo ampliata, utraque apice oblique truncata, sutura conjunctim emarginata, angulis posticis distinctis; dorso profunde striato-punctata, cretis interruptis, hic illic inter se ramulis interdum convexis instructa. *Pedes* mediocres, mutici.

The present remarkable genus stands, as far as my knowledge extends, alone amongst the great tribe of *Phytophaga*, in wanting the labial palpi. I myself possess two species of the genus which both agree entirely in habit and external characters, but although I have subjected the specimens to a most careful examination under a powerful lens (the two-thirds of Ross), I cannot detect the slightest trace, either of the palpi themselves, or of their points of insertion; in fact, the basal segment of the ligula, on which the labial palpi are always inserted, appears itself to be obsolete, its place being occupied by the large apical segment. The genus ought to follow *Nepius*.

1. *Chæridiona metallica.*

Anguste cuneiformis, convexa, subtus picea, nitida, æneo-micans, supra cupreo-aurea; thorace profunde et rude rugoso-foveolato, disco viridi-metallico; elytris apicem versus paullo ampliatis, angulo postico obtuso, utrisque quadricostatis, costâ secundâ ante apicem tertiâque in medio et ante apicem interruptâ, interspatiis profunde biseriatim foveolatis, vittâ latâ communi a basi fere ad apicem extensâ viridi-metallicâ, margine apicali fulvo; antennis rufo-fulvis, apice nigris; pedibus fulvis, tarsis piceis.

Long. $2\frac{1}{3}$ lin.

Hab.—India.

Head coarsely and deeply punctured; front produced anteriorly between the eyes into an angular projection, the apex of which is extended downwards to form a longitudinal ridge, which runs along the face as far as the upper border of the clypeus; four outer joints of the antennæ black. Thorax subcylindrical, scarcely longer than broad, sides parallel, bisinuate, anterior angles notched, bidentate, surface very deeply and coarsely punctured, rugose. Elytra broader than the thorax, sides narrowly margined, slightly dilated towards the posterior angles, the latter obtuse; each elytron with four strongly-raised longitudinal costæ, the first and fourth entire, extending nearly to the apex, the second entire for the greater part of its course but interrupted some distance below its middle, the third, which arises on the humeral callus, broadly interrupted in the middle and again just before reaching the apex.

2. *Chæridiona picea.*

Anguste oblonga, convexa, picea, nitida, pedibus fulvis; thorace subcylindrico, rude punctato, disco irregulariter excavato; elytris thorace latioribus, fere parallelis, angulo postico acuto, profunde seriatim foveolatis, vittis elevatis interruptis cretisque longitudinalibus, hic illic inter se connexis, instructis.

Long. 2 lin.

Hab.—India.

Head coarsely punctured, produced anteriorly in the same manner as in *C. metallica*. Thorax subcylindrical, subquadrate, sides more broadly margined than in the former species, lateral borders straight and parallel, slightly sinuate behind the middle, armed just in front of the base with a minute tooth; anterior angles notched, produced anteriorly into a short tooth; upper surface coarsely rugose-punctate, deeply excavated on the disc. Elytra furnished each with four strongly-raised costæ which from being much more interrupted than in *S. metallica*, are more difficult to trace; thus the first costa is to be seen just below the base, again at the middle of the elytron (where it stands a little out of the line, and is connected by short transverse ridges above to the third and below to the second costa), thirdly, half-way between the middle and apex, and lastly, at the apex itself; the second is visible at the base, below the middle, and again a short distance before reaching the apex; the third, which commences on the humeral callus, is entire nearly to the middle of its course (where it is connected, as above stated, by a short oblique branch to the first costa), then interrupted it again appears half-way between the middle and apex; lastly, the fourth costa, which is nearly entire, is interrupted some distance below the middle of the elytron, but just below appears again, and forms a short oblique ridge, which runs inwards as far as, but a little below, the termination of the third costa.

XXV. *New Species of* Coleoptera *from Chontales, Nicaragua.* By H. W. Bates, F.Z.S., Pres. Ent. Soc.

During the past few months, three or four small collections of *Coleoptera* have been received from the province of Chontales in Nicaragua, the product of the researches of Mr. T. Belt, and Mr. E. Janson, junr. These collections contained so large a proportion of new and handsome species of tropical American types, that they have attracted much attention among Coleopterists, and no apology is needed for the present attempt to make some of them better known. Further collections may be expected, and any general account of the Coleopterous Fauna must be deferred for the present.

LONGICORNIA.

Mallaspis paradoxa.

Elongata, convexa, postice attenuata, subtiliter punctulata, fusco-ænea, elytris postice castaneis; capite angusto, longissimo; thorace spinâ laterali pone medium fortissimâ, antice valde attenuato, margine lævi carinâque marginali obsoletâ; antennis corpore tertiâ parte brevioribus, lævibus, violaceis, apices versus gradatim rufescentibus, articulis 3-6 compressis, paululum dilatatis, cæteris subcompressis, angulis totis rotundatis; pedibus violaceis, lævibus; corpore subtus vix punctulato, lateribus aureo-pubescenti, prosterno transversim rugato.

Long. 1 un. 9 lin.—2 un. (♀ ?).

This singular species differs from all its allies by the absence of a lateral carina to the prothorax, a trace of which only remains near the anterior margin. In conjunction with this, the lateral spine stands out very prominently and is unusually stout and long, the thorax is rapidly narrowed from the spine to the front margin, and the disc has only a few fine scattered punctures. The brassy-fuscous colour gradually changes into castaneous, from near the base to the tip of the elytra. In colour and punctuation, as well as in the length of the head, the species approaches the Mexican *M. longiceps* of White, but this has the usual crenate prothoracic carina, and the antennal joints are linear, with distinct angles. In *M.*

paradoxa the joints have rounded angles, as in *M. scutellaris*. I am uncertain about the sex of my two examples, but from the shortness and smoothness of the antennæ, &c., I judge them to be females.

Ophistomis picticornis.

Flavo-testacea, capite utrinque vitta nigra usque ad marginem posticum thoracis continua; elytris (ad humeros latis) utrinque maculis lateralibus tribus, quartaque discoidali prope scutellum, et marginibus anguste nigris, apicem versus litura indistincta fusca; antennis nigris, articulis 7-9 albis; prosterno utrinque vitta, ventroque annulis quatuor, nigris; pedibus flavis, femoribus et tibiis apice, tarsis totis nigris.

Long. 8-9 lin. (♂).

Two examples.

Agaone monostigma.

A. molorchoidi affinis; angustata, rufo-testacea; thorace cylindrico, confertim grosse punctato, vitta mediana postice abbreviata nigra; elytris abdomine multo brevioribus, truncatis, vix nitidis, punctatis, punctis lateralibus grossioribus, ibique vitta marginali nigra; antennis dimidium corporis superantibus, apice incrassatis, nigris, sparsim ciliatis; femoribus apice supra, tibiis et tarsis (partim) nigris, femoribus posticis apice bene distincte nigro-cinctis.

Long. 3¼ lin. (♀).

One example.

Crioprosopus rutilans.

Angustatus, supra lævissimus, capite thorace et scutello nigris, elytris viridi-æneis politissimis, nitore cæruleo certo situ splendentibus; metasterno et ventre obscure rufis, nigro variis, lævibus; pedibus nigris, femoribus annulo læte rufo; thorace transverso, supra subæquali, sparsim punctulato, utrinque tuberculo grosso mediano alteroque obtusiori anteriori; antennis corpore paulo longioribus (♀), articulis 4-11 albo-sericeis; prosterno convexo, apice rotundato; metasterno triangulari, producto.

Long. 1 un. 2 lin. (♀).

One example. A second (male) specimen was also sent by Mr. Belt, but I do not know into whose collection it passed.

Cœlarthron quadrinotatum.

C. bilineato formâ simillimum; nigerrimum, politum, sparse griseo-setosum; thorace vittis duabus antice abbreviatis albo-sericeis; elytris pone medium fascia ad suturam interrupta, et litura prope basin e lineis tribus formata (duabus longitudinalibus unaque transversali), testaceo-albis; antennis (♂ et ♀) articulis 3-6 triquetris, apice valde dilatatis.

Long. 9-10½ lin. (♂, ♀).

Chalastinus rubrocinctus.

Niger, opacus, elytris in medio fascia communi coccinea; antennis ♂ corpore duplo longioribus, articulo primo gradatim fortiter clavato, 3° apice intus dilatato et nigro-hirsuto, cæteris apice nodosis, medio pallide rufo-griseis, ultimo præcedente multo breviori, obtuso; mesosterno simplici; tarsis articulis basalibus griseis.

Long. 7-9 lin. (♂, ♀).

The narrow crown with elevated approximate antenniferous tubercles, the nodulous tips of the antennal joints, and the slightly dilated front tarsi of the ♂, bring this handsome species within the genus *Chalastinus*; it differs in the non-tuberculate mesosternum and uncurved antennal joints, which appear, therefore, to be specific characters. Many examples were sent by Mr. Belt, and one of unusually large size by Mr. E. M. Janson.

Anisocerus personatus.

Oblongus, supra grosse sparsim punctatus, lateribus fuscus, in medio late albo-vittatus; vittâ elytrorum bis dilatatâ, imprimis paulo ante medium, postea prope apicem, parte albâ fusco-punctatâ, punctis majoribus duobus ante medium prope suturam, alteris duobus magis approximatis ante apicem; corpore subtus nigro, cinereo-tomentoso; antennis ♂ corpore plus duplo longioribus, griseis, articulis apice nigris, articulo 3° apice globoso et articulo ultimo brevi.

Long. 6-7 lin. (♂, ♀).

The sides of the body above are blackish, varied with tawny-brown and dark punctures; the central ashy white streak, which is confined to a broad vitta on the head and thorax, forms on the elytra a figure resembling an elongate mask, of which the two small black dots on the anterior dilated portion represent the eyes, the larger spots behind near the suture the nose, and the dark apex of the elytra the mouth.

The insect is of a much more elongate figure than the other true *Anisoceri*, resembling in this respect much more the genus *Caciomorpha* of Thomson; but the dilated third joint, and the very much abbreviated eleventh joint of the antennæ, bring the species within the definition of *Anisocerus*.

Lagocheirus rosaceus.

L. araneiformi valde affinis; differt antennis, pedibus lineisque thoracis et elytrorum roseo-tomentosis; thorace valde punctato, maculis quatuor bene discretis nigris, lineisque irregularibus roseis; elytris lineis numerosis roseis fusco-punctatis, pone medium maculas utrinque duas fuscas includentibus, ante has macula marginali majori semicirculari fusca, parte apicali lineis utrinque quinque longitudinalibus roseis.

Long. 9 lin. (♂, ♀).

Many examples of this and the following species were sent.

Lagocheirus V-album.

L. araneiformi formâ similis; multo obscurior, fuscus; thorace utrinque vittâ abbreviatâ, a medio usque ad marginem posticum, fuscâ; elytris obscure fuscis, vix variegatis, maculâ magnâ obscuriore laterali minus distinctâ, mox pone hanc liturâ albâ literam V vel N simulante; pedibus obscuris, tarsis pallidis, articulo unguiculari apice nigro excepto.

Long. 8½ lin. (♂, ♀).

Amphionycha bifasciata.

Robusta, nigra, griseo subtiliter tomentosa; capite thorace paulo angustiori, fronte supra macula fulva; thorace supra fulvo vel roseo, maculis 3 nigris; elytris

parallelis, apice flexuoso-truncatis et externe spinosis, fasciis duabus flavis vel roseis nigro-marginatis, fascia prima flexuosa, secunda obliqua; antennis nigris, sparsim subtus ciliatis.

Long. 6-8 lin. (♂, ♀).

Many examples of both sexes.

CARNEADES, nov. gen. COLOBOTHEINARUM.

A *Colobothea* differt carina laterali elytrorum nulla vel indistincta, et articulo antennarum basali apice abrupte clavato.

Carneades superba.

Magna, crassa, elongata, antice posticeque attenuata, tomento ochraceo dense vestita; thorace supra maculis duabus, elytris fasciis quatuor, prima tertiaque macularibus, nigris, humeris antice curvatis, valde productis; antennis nigris, articulis basi griseis; pedibus nigris, nitidis, femoribus et tibiis posticis rufo-annulatis, annulis e tomento denso formatis, tarsis flavo-tomentosis, articulo unguiculari nigro.

Long. 11 lin.—1 un.

The design of the elytra in this fine insect consists of four transverse belts or rows of spots on a ground of dense yellowish tomentum; the first belt includes a black spot covering each shoulder, and two round spots near the suture; the second, a little before the middle, is entire except near the suture and oblique; the third consists of four equidistant spots; and the fourth, near the apex, is entire excepting the sutural interruption. The prothorax beneath has on each side a narrow black stripe, and a small round spot above it. The middle of the breast is black.

Carneades delicia.

Minor, minus elongata, postice valde attenuata, cinereo-subsericeo-tomentosa; signaturis elytrorum ut in *C. superba*, fascia secunda apud suturam haud interrupta et minus obliqua excepta; tarsis rufis, articulis 3° et 4° nigris.

Long. 6½ lin.

Jamesia multivittata.

J. globiferæ formâ similis; fusca, subnitida; capite angusto, fronte vittis duabus ochraceis; thorace transversim grosse rugato, lateribus haud tuberculato, ochraceo sparsim tomentoso; elytris humeris angulatis, postice paulo attenuatis, basi tuberculis rotundis nigris sparsis, postice sparsim punctatis, basi et vittis, septem utrinque, in seriebus duabus transversis ordinatis, ochraceis; subtus ochraceo-tomentosa et nigro-punctata; antennis pedibusque nigro-piceis.

Long. 10½ lin.

Two examples.

Deliathis nivea.

Elongata, tomento densissimo niveo induta; capite supra vittulis quatuor, thorace vittis tribus, et elytris maculis numerosis, nigris, nitidis; maculis elytrorum prope suturam et marginem condensis, disco multo rarioribus, apicibus mucronatis; subtus medio corporis et ventris marginibus nigris nitidis; antennis pedibusque nigris, griseo tenuiter tomentosis.

Long. 1 un. 5 lin.

LAMELLICORNIA.

Allorrhina anomala.

Oblongo-quadrata, angusta, supra nigro-purpureo-velutina; thorace limbo angusto, postice abbreviato; elytris limbo laterali, maculis duabus transversis discoidalibus, et duabus marginalibus rotundatis prope apicem, flavis; mesosterno triangulari, crasso, convexo.

Mas: capite quadrato, lateribus utrinque cornu brevi elevato retrorsum spectante, thoraceque cornu anticomarginali brevi horizontali apice emarginato; tibiis anticis elongatis, linearibus, edentatis.

Long. 11 lin.; lat. 5 lin. (♂).

A remarkable species, agreeing with *A. Lansbergii* (Sallé) in the peculiar armature of the head and anterior margin of the thorax, in which both differ greatly from all other known species of *Allorrhina*, or *Gymnetinæ*. The peculiarity seems to arise from the development into

horns of the lateral carinæ of the head, at the expense of the central horizontal horn, which is absent, as is also the horn at the edge of the clypeus.

One example only, received from Mr. Belt.

Gymnetis ramulosa.

Ad sectionem *G. holosericeæ*, etc. pertinens; processu mesosternali magno, crasso, deorsum curvato, et antice tuberculato; supra olivacea, velutina; elytris limbis lateralis et apicali angustis æqualibus, illo ramulos tenues duos vel tres emittente, uno pone medium in fasciam flexuosam prope ad suturam prolongato; abdomine ♂ nigro, nitido, ♀ olivaceo, subopaco.

Long. 10 lin. (♂, ♀).

A large number of specimens of this species were sent home by Mr. Belt.

XXVI. *A Synopsis of the genus* Clothilda.

By Osbert Salvin, M.A., F.L.S., &c.

[Read 15th November, 1869.]

During an examination of a small collection of Diurnal *Lepidoptera* which was sent to this country by Mr. Ramsden, from the Island of Cuba, I discovered that errors have been made with respect to the identification of two members of the limited genus *Clothilda*, by all recent writers on Cuban *Rhopalocera*. In one case, the Haitian *C. pantherata* and its Cuban representative have been considered as one and the same species, though the latter received a different name from Hübner, which was afterwards recognized by Klug. In the other case, I found that the second Cuban form of this genus usually stands in collections as *C. jægeri*, from which, however, it differs materially, as will be seen below. Besides these additions to the Antillean species, I have another to add to *C. euryale*, hitherto known as the sole representative of the genus on the continent of America; thus raising the whole number of species in this genus to six.

As stated in Doubleday and Hewitson's "Genera of Diurnal Lepidoptera," the genus *Clothilda* was first established by Blanchard, in 1840, upon *Argynnis briarea*, of Godart (*C. pantherata*). In all probability, Hübner's genus *Anicia* is of prior date to *Clothilda*, but as much uncertainty prevails regarding the years when the various portions of Hübner's great work were issued, and, moreover, as *Anicia* was never characterized, I think Hübner's title had best be set aside, and the arrangement of the "Genera" adhered to. For the same reasons, Hübner's name *Anelia*, applied in the third volume of the "Exotische Schmetterlinge" to *C. euryale*, must also be considered as a synonym.

The genus bears a strong resemblance to *Argynnis*, but differs chiefly in possessing a well-defined lower discocellular nervure to the posterior wing. Indeed, this feature is so well developed, that it renders the position of *Clothilda*, in the *Nymphalinæ*, somewhat anomalous, if the character of the open or closed cell be taken as of primary importance.

In its distribution, *Clothilda* is one of the very few genera possessed in common by the Antilles and Central

America, to the exclusion of the rest of America. Two species are peculiar to Haiti, and two to Cuba; whilst one inhabits the highlands of Mexico and Guatemala, and another the mountainous parts of Costa Rica. All the species are, I believe, inhabitants of the damp forests of the higher mountainous districts, where a temperate climate prevails.

The following table will serve to separate the six species.

Clavis specierum.

A. Species alis ochraceis, nigro-maculatis.
  a. posticis, maculis nigris in serie duplici (margine excepto) positis, notatis. . . . 1. *C. pantherata.*
  b. posticis, maculis nigris in serie triplici (margine excepto) positis, notatis. . . . . 2. *C. numida.*

B. Species alis fuscis, anticis supra aut subtus rubro-notatis.
  a. anticis suprà et subtus distinctè rubro-notatis.
    a. posticis fuscis, haud fasciatis. . . . . 3. *C. euryale.*
    b. posticis fuscis, ochraceo late transfasciatis. 4. *C. insignis.*
  b. anticis supra fuscis, subtus rubro-notatis.
    a. anticis maculis albis, haud transfasciatis. 5. *C. jœgeri.*
    b. anticis maculis albis distinctè vittatis. . 6. *C. cubana.*

The following generic titles have been applied by the following authors to members of the group.

Clothilda, Blanch. Hist. Nat. Ins. iii. 440 (1840). Type *C. pantherata.*

,, Doubl. & Hew. Gen. Diurn. Lep. vol. i. (1846-50).

,, Ménét. Enum. Corp. An. Mus. Petrop. p. 21 (1855).

,, Herr.-Sch. Schm. Ins. Cuba, in Correspondenz-blatt, Regensburg (1863).

Anicia, Hübn. Exot. Schm. vol. ii. Type *A. numida.*

Anelia, Hübn. Exot. Schm. vol. iii. Type *A. euryale.*

Argynnis, Godt. Enc. Méth. ix. 261 (1819).

,, Klug, Neue Schm. Mus. Berl. p. 2 (1836).

,, Ménét. Nouv. Mém. Soc. Nat. Mosc. ix. 125 (1840).

Papilio, Martyn, Psyche, t. 12, f. 27; t. 14, f. 35 (1797).

1. Clothilda pantherata.

Papilio pantherata, Martyn, Psyche, t. 12, f. 27; t. 14, f. 35 (1797).

Clothilda pantherata, Doubl. & Hew. Gen. Diurn. Lep. i. 156.

Argynnis briarea, Godt. Enc. Méth. ix. 261 (1819).

Hab.—Haiti (*Jæger, Tweedie*). In Mus. Salv. and Godm.

This species has been long known to Entomologists, having been well figured by Martyn in the year 1797. Since that date, specimens appear to have been obtained by every collector who has visited the Island of San Domingo. The species was described by Godart in the year 1819, under the name *briarea,* and mention is made of it by Ménétriès in his list of Jæger's collection. Specimens were also procured in the neighbourhood of Port-au-Prince by the late Mr. Tweedie, from whose collection our specimens were derived. As Hübner's figure of *C. numida* is, perhaps, the best known, and more accessible than that of Martyn, I will here shortly point out the differences between *C. pantherata* and its Cuban representative. The most noticeable difference on the upper surface is on the hind wings, which bear a double instead of a triple row of black spots inside the dark margin; beneath, instead of a simple dark margin to the hind wings, there is a series of well-defined V-shaped black markings, bordered inwardly with white; the markings, too, of the posterior wings are much clearer, the row of black spots outside the cell being very conspicuous.

The sexes do not differ in coloration, but females are rather larger in size.

2. Clothilda numida.

Anicia numida, Hübn. Ex. Schm. ii. pl. 22, 23.

Clothilda pantherata, H.-Sch. Schm. Ins. Cuba, p. 4.

Hab.—Cuba (*Ramsden*).

3. Clothilda euryale.

Argynnis euryale, Klug, Neue Schm. Mus. Berl. p. 2, pl. ii. f. 1, 2 (1836).

Clothilda euryale, Doubl. & Hew. Gen. Diurn. Lep. i. 156, pl. 21, f. 4.

Anelia thirza, Hübn. Ex. Schm. iii. pl. 24.

Hab.—Mexico (*Deppe; Fenochio*); Guatemala (*Salvin* and *Godman*). In Mus. Salv. and Godm.

The specimens from which Klug took his original description were collected by Deppe, through whose exertions the Berlin Museum owes, in a great measure, its extensive series of the natural productions of Mexico. Deppe's discoveries, however, have so long remained unnoticed in the stores of that Institution, that the majority of the species have since been rediscovered by more recent explorers, and thus the fruits of his expedition have been fore-stalled. The present species, however, escaped the fate of many others, and was described by Klug as long ago as 1836.

The species is not uncommon in the highland districts of Guatemala. On one occasion, in the mouth of September, I captured several specimens which were flying lazily about the foot of a precipice reeking with moisture in the high mountains above the old Indian town of Quichè. The altitude of this spot is about 8000 feet above the sea level. It also occurred in the ravines of the Volcan de Fuego, at an elevation of about 7000 feet; and in the mountains surrounding the Plain of Salamá, in Vera Paz, at an elevation of 4000 feet. Specimens have also been forwarded to us from the northern slopes of the mountains of Alta Vera Paz, below the village of San Christobal.

As in *C. pantherata*, the male of this species does not differ in coloration from the female; it is, however, smaller, and has the anterior wings more pointed.

4. Clothilda insignis, sp. n.

C. alis fuscis, anticis supra et subtus rubro-maculatis; posticis fuscis, ochraceo late transfasciatis.

♀. Antennæ black; palpi white, with a lateral black streak; head black, with three minute white spots; prothorax brown, thorax and abdomen very dark brown; wings rich brown, the posterior half of the cell of the anterior wings and outside the cell black, including rich red curved marks, just as in *C. euryale;* beyond this patch are ochre spots, two pairs on the costa, others in pairs along the outer margin; there are also others between the median branches; on the hind wings a broad curved ochre band, deeply sinuate on its outer edge, crosses the wing from the apical to the posterior angle, where it becomes almost white; the cilia of the hind wings bear white spots, inside which are other indistinct spots in pairs: beneath, rich ochre, with black and red spots corresponding to those of the upper surface, the latter being larger; at the base of the wing are some transverse and longitudinal pale marks, and the ochre marks on the rest of the wing correspond with those of the upper surface; on the hind wing there is a prominent red spot on the middle of the costa, an irregular black line, bordered with white, crosses the wing, three transverse white lines cross the cell to the submedian nervure, between which and the inner margin are longitudinal white lines; beyond the cell the nervures are black, and cut a deeply sinuate band of whitish; on the margin are large pale spots in pairs.

Hab.—Highlands of Costa Rica (*Arcé*). In Mus. Salv. and Godm.

This species is closely allied to *C. euryale,* and evidently represents that species in the highlands of Costa Rica. For some time I considered this specimen to be a female of *C. euryale,* but having acquired true females of that species, I am now convinced that the Costa Rican *Clothilda* must be distinct.

My reasons for separating it may be thus shortly given. Individuals of *C. euryale* do not vary from one another in any appreciable degree, nor do members of other species of the genus, as *C. pantherata,* or *C. numida.* The sexes also are alike, both in *C. euryale* and *C. pantherata,* and, moreover, species from the highlands of Costa Rica, though evidently closely allied to their representatives in the highlands of Guatemala and Mexico, very frequently are appreciably different. Hence the

Costa Rican *Clothilda* would, *a priori*, very probably differ from the more northern species. We find that it does, and that the specimen does not represent the normal female of *C. euryale*. As shown before, the species of this genus have no apparent tendency to vary; I have, therefore, though at present only a single specimen has reached us, no further hesitation in considering that it belongs to a representative of the Mexican species, and is distinguishable by well-marked characters.

These differences consist in the presence of a well-marked band on the hind wings, and in the absence of the red spots seen in *C. euryale* on the same wings; beneath, the ochraceous colouring is bright, and instead of being brownish and the light markings forming a band beyond the cell, are very much larger, and more clearly defined; the margin of the hind wing is not so deeply sinuate, and the curvature of the outer margin of the anterior wing not so deeply concave.

5. Clothilda jægeri.

Argynnis jægeri, Ménétr. Nouv. Mém. Soc. Nat. Mosc. ix. 125, pl. x. f. 3, 4 (1840).

Clothilda jægeri, Doubl. & Hew. Gen. Diurn. Lep. i. 157.

Hab.—Haiti (*Jæger, Tweedie*). In Mus. Salv. and Godm.

This species is quite distinct from the preceding. It differs in being smaller in size, in having the costa of the anterior wings less abruptly arched, and in being destitute of the brilliant red spots on the upper surface of the same wings, which have only a reddish tinge at the base; beneath, the markings are very indistinct compared with those of *C. euryale*.

This species seems to be very rare. Our specimen formed part of Mr. Tweedie's collection.

6. Clothilda cubana, sp. n.

Clothilda jægeri, H.-Sch. Schm. Ins. Cuba, p. 4.

C. alis fuscis; anticis maculis albis distincte transfasciatis, subtus rubro-notatis.

♀. Antennæ black; palpi white, with a longitudinal black stripe; head, thorax, and abdomen, very dark brown; wings dark brown; anterior wings with a ma-

cular band of conspicuous white spots, extending from the costal margin to the posterior angle; outside this band is another white spot, between the third median branch and the lower radial; on the posterior wings a pale ochraceous band, cut by the nervures, stretches across the wing from the apical to the posterior angle: beneath, in addition to markings corresponding to those of the upper surface, there are faint blueish pencillings on the basal half of the cell, and red marks are situate one across the cell, others close to the median nervure, while others cross the interspaces between the median branches; the hind wings are mottled with grayish about the apical angle, and near the transverse band, and very faint dark and light stripes are placed transversely nearer the base of the wing.

Hab.—Cuba.

The form of the wings in this species is much the same as in *C. euryale,* but the apex of the anterior wings is more produced.

This species has been considered by Lepidopterists to be the female of *C. jægeri;* but besides the very different character of the markings, the close relationship of both with *C. euryale* would lead us to conclude that, as in that species, the sexes do not differ materially in outward form and markings.

The specimen from which my description was taken is in the collection of Mr. Cornthwaite.

XXVII. *Note on* Boreus hyemalis *and* B. Westwoodii. By Robert McLachlan, F.L.S., Sec. Ent. Soc.

[Read 6th December, 1869.]

In the "Entomologist's Monthly Magazine," Vol. iii. p. 132 (November, 1866), Dr. Hagen in his "Synopsis of the Genus *Boreus*" first made known to Entomologists the existence in Europe of two species of this singular, and still somewhat rare, genus of *Neuroptera*. His short descriptions are as follows:—

"*B. hiemalis*, Linné."

"Bronze-brown; beak, antennæ, legs, wings, appendices of the male, and borer of the female, clear brown, the antennæ dark brown at the apex; wings of the male long, acute, curved, and pectinated internally; first abdominal segment of the male with an erect transverse fold in the middle above, long, rather longer than broad; second segment with a similar fold, but smaller, almost in the form of a tubercle; lamina below the appendices, long, triangular elliptic at the apex.

"*Habitat:* Germany, Hanover, East Prussia.

"*B. Westwoodii*, Hagen."

"Bronzy-green; beak, antennæ, legs, wings, appendices of the male, and borer of the female, yellow; antennæ and legs dark brown at the apex; first abdominal segment of the male with a fold as in *B. hiemalis*; second segment with a quadrate fold, smaller; lamina broader, slightly grooved at the apex.

"*Habitat*: Germany, Finland, England.

"This is the species figured by Westwood in the frontispiece to his 'Introduction,' and probably also that described by Curtis and Stephens."

When working up the materials for my Monograph of the British *Neuroptera-Planipennia*, published in the Transactions of this Society, I felt compelled to ignore the existence of *B. Westwoodii* in Britain (Tr. Ent. Soc. 1868, p. 220), because I had never seen a male possessing the characters pointed out by Dr. Hagen, and the

few Continental examples of the genus to which I could refer, all seemed equally to pertain to *B. hyemalis*. Recently, however, my attention has again been called to the subject, and I resolved to obtain a sight of Professor Westwood's insect. That gentleman obligingly lent me two males, all that exist in the Hope Museum; these are certainly distinct from *hyemalis*, and agree well with the description of *Westwoodii*. But when lending me the insects, Prof. Westwood stated that both were from Germany, and that he never possessed a British male example. Under these circumstances, it is yet too soon to attribute the two species to Britain. All the native specimens I have seen are assuredly *hyemalis*, at any rate, so far as the males are concerned; and as for the females, it would certainly be unsafe to rely upon differences of colour alone, without having the other sex, as the colour varies immensely, according to the degree of maturity of the individual, and I may remark that I have males of *hyemalis* both bronzy-brown and bronzy-green; the clear yellow of the legs, &c., in *Westwoodii*, is characteristic, and some native female examples seem to possess this attribute, yet we must see males before deciding upon them.

I conclude these remarks with some notes upon the structural characters of the males of the two species.

In *B. hyemalis*, the first visible dorsal abdominal segment (I consider this in reality is the second segment), bears near its apical margin (but not on the margin), a transversely quadrate, thin, raised lobe, considerably longer than broad; on the succeeding segment is a faint indication of a similar lobe, but very indistinct. The valve ("lamina," Hagen) proceeding from the ventral apex of the abdomen is triangular, the sides slightly rounded, the lower surface convex, and the apex somewhat produced and elliptical. (See fig. 1.)

In *B. Westwoodii*, the first visible dorsal abdominal segment has the raised lobe as in *hyemalis*, but that on the succeeding segment is much larger than in that species, very distinct, and similar in form to the other, but less transversely quadrate. The ventral apical valve is shorter, the sides not rounded, the apex sharply truncate, and even slightly incised. (See fig. 2.)

I have penned these notes with the hope that, by calling more attention to the peculiarities of the two

species, we may soon be able to claim both as natives of this country. Little can be added to the information as to distribution given by Dr. Hagen, save that I have received Swedish examples of *B. hyemalis* from Professor Stål, and it is also recorded as Swedish by Zetterstedt and Wallengren (though apparently not known as such to Linné when he wrote his "Fauna Suecica"). Omitting England from the localities for *Westwoodii*, that species would appear only to be known from Germany and Finland.

The descriptions and figures given by authors (before Hagen) all probably pertain to *hyemalis;* at any rate, none of them are sufficiently explicit to prove they had the other species under consideration.

Fig. 1. Fig. 2.

B. hyemalis. *B. Westwoodii.*

PROCEEDINGS

OF THE

ENTOMOLOGICAL SOCIETY OF LONDON

FOR THE YEAR

1869.

February 1, 1869.

H. W. Bates, Esq., President, in the chair.

The President returned thanks for his re-election, and nominated as his Vice-Presidents Messrs. Pascoe, Frederick Smith, and A. R. Wallace.

Donations to the Library.

The following donations were announced, and thanks voted to the donors:—'Catalogue of Scientific Papers (1800—1863) compiled and published by the Royal Society of London,' Vol. ii.; 'Proceedings of the Royal Society,' Nos. 105 and 106; presented by the Society. 'Journal of the Linnean Society,' Zoology, No. 45; by the Society. 'Journal of the Quekett Microscopical Club,' Nos. 4 and 5; by the Club. 'Bulletin de la Société Impériale des Naturalistes de Moscou,' 1868, No. 1; by the Society. 'Genera des Coléoptères,' Tome viii.; by the Author, Prof. Lacordaire. 'Essai Monographique sur les Oxybelus du Bassin du Léman (Insectes Hymenoptères),' par Frédéric Chevrier; by the Author. Newman's 'British Moths,' No. 26: by the Author. 'The Zoologist,' for February; by the Editor. 'The Entomologist's Monthly Magazine,' for February; by the Editors.

Exhibitions, &c.

Mr. Edward Saunders exhibited a specimen of Pachetra leucophæa, captured by Mr. N. E. Brown, on a gas-lamp at the Redhill Railway Station, on the 14th May, 1868.

The Secretary read a letter from Dr. W. Webster Butterfield, of Indianapolis, offering to exchange Lepidoptera of Indiana, U.S.A., for those of England.

Mr. Pascoe made some observations on the Coleopterous genera Aprostoma, Mecedanum and Gempylodes, with reference to the remark of Prof. Westwood (Proc. Ent. Soc. 1868, p. l.) that these genera would probably have to be united. M. Guérin's

genus Aprostoma was by Prof. Lacordaire referred to the family Brenthidæ; at all events the insect from the Niger exhibited by Prof. Westwood was generically distinct, and in Mr. Pascoe's opinion abundantly distinct, from Gempylodes.

Mr. Pascoe exhibited a curious bug (perhaps an Odontoscelis) from the neighbourhood of Toulon; he had been unable to identify it with any species described by M. Mulsant.

Prof. Westwood gave an account of the new vine-pest, Rhizaphis, to which his attention was first called in 1863: its mode of attacking the vine was two-fold, or at all events specimens between which he could not find any difference, and which to all appearance belonged to the same species, caused damage to the vines in two very different ways. Some of them sucked the upper side of the leaf, and caused the appearance on the lower side of a gall, which was unique in its character; the upper coat of the leaf split into tooth-like or radiating segments, each with delicate white filaments; beneath this covering the insect sheltered herself, being visible through the interstices between the radiations, and was of the size of an ordinary pin's head; there she lay her eggs, which hatched immediately, and the mother and young together filled the cavity or cell; the young, however, soon left her, and went to the younger parts of the plant, to commence depredations on their own account; a leaf would sometimes be covered with them. Prof. Westwood knew no other instance of an insect burying itself in this manner. The other mode of attack was by sucking the roots or rootlets underground, thereby causing decay and rottenness, and killing the vine; there was not any gall or swelling formed, but he had found the young ones with their parent on the roots. In the South of France whole vineyards had been destroyed; and the pest occurred in England, though whether or not introduced or imported with the vines he could not say. The female alone had been detected in this country, but Dr. Signoret had obtained the male, and referred it to the genus Phylloxera. Prof. Westwood wished to hear if any Member present was aware of any instance of the same insect attacking a plant both above and below ground in two such dissimilar ways.

Mr. Frederick Smith was able to mention an instance. The common Cynips aptera was well known to form clusters of galls on the fibrous roots of the oak; on one occasion he had found, in Bishop's Wood, Hampstead, on the stem of an oak tree, about a foot above the ground, a large lump which he could only compare to a number of barnacles fastened to the bole; he cut the lump off, took it home, and to his surprise bred therefrom between twenty and thirty specimens of Cynips aptera.

Mr. Charles Horne (who was present as a visitor) exhibited the stings of two scorpions which were killed by rats at Benares, on the 19th July, 1865; one of the stings shewed a large hole where it had been perforated by the tooth of the rat. The scorpion and rat were placed under a glass cover, and for some time the scorpion fenced about, tail over head, trying to get hold of the rat, but at a favourable moment the rat dodged down and made a rush at the scorpion, bit the sting through the middle, then placed its foot upon the scorpion, and began to pull off the legs at leisure. In India it was the constant habit of rats to destroy scorpions, and he believed they usually ate them; but in the case above described the scorpion was not eaten by the rat.

Paper read.

The following paper was read:—"Description of a New Species of Hestina," by Mr. A. G. Butler. The species, Hestina Zella, from India (?), was described as

being an excellent mimic of Danais Juventa, and most nearly allied to H. Mena of Moore.

February 15, 1869.

H. W. Bates, Esq., President, in the chair.

Election of Members.

Arthur Wynne Foot, Esq., M.D., of 21, Lower Pembroke Street, Dublin, was elected an Annual Subscriber.

Exhibitions, &c.

Prof. Westwood exhibited two parasites on bats from Ceylon, both Diptera, a Strebla and a Nycteribia, prepared for the microscope in Canada balsam, by Mr. Staniforth Green, of Colombo. They were simply pressed between sheets of paper, an aperture having been made for the escape of the fluid matter, and whilst still moist were laid on the glass, and the balsam, heated over a spirit lamp and poured on hot, filled up the interstices and made the preparation transparent.

Mr. Butler exhibited a living locust of the genus Conocephalus: it had been received by Mr. Swanzy in London on the 2nd of February, and arrived on board a ship from the West coast of Africa. A swarm of them covered the decks, being at first green, but after about three days they became brown, probably from the absence of green food: notwithstanding exposure for some days to a very heavy sea, many specimens clung to the vessel and arrived in the Thames alive. The one exhibited had taken nothing since its arrival but a little water, except on one occasion when it was compelled to clean its face of some sugar which Mr. Butler placed on it.

Mr. F. Smith exhibited a collection of honey bees from all parts of the world, and solicited the loan of foreign species, the localities of which were known, to extend his knowledge of their geographical distribution and assist him in the preparation of a memoir on the honey bees supplementary to that published by him some few years ago in the 'Annals and Magazine of Natural History': it was very desirable to obtain all the sexes of all the species, as the workers alone did not offer sufficiently marked characters to determine the identity or specific distinctness of many of the forms. Among the bees exhibited there were, a queen of Apis mellifica which was with difficulty to be distinguished from a worker; all the sexes of Apis Ligustica and fasciata (the latter, in the opinion of Dr. Gerstäcker was only a variety, but Mr. Smith thought he could show its distinctness); the male and worker of A. Indica, sent by Mr. Atkinson, of Calcutta; a queen, sent by Mr. Lewis from Japan, very closely resembling the common A. mellifica; specimens of A. nigrocincta (considered by Gerstäcker to be a variety of A. Indica); all the sexes of A. floralis, the smallest known honey bee (the worker of which is the A. lobata of Smith); A dorsata, the largest and commonest in India and the Eastern Archipelago (of which A. testacea was only a variety); and all the sexes of a bee from the Cape of Good Hope which might be only A. Ligustica, but was considerably larger. Mr. Smith also exhibited pieces of the comb of various species; the worker cells of the above-mentioned bee from the Cape were one-tenth

smaller than those of A. mellifica, ten of the former being equal to nine of the latter; the cells of A. Indica were still smaller than those from the Cape; the combs of A. floralis, like those of A. dorsata, were attached to branches of trees; lastly, there were some cells of A. dorsata, made of the same material as the rest, but an inch and a half in depth, which Mr. Smith supposed to be honey-cells.

Mr. Druce exhibited a collection of butterflies from Nicaragua, brought to this country by Mr. Thomas Belt. Amongst them was a Papilio, near to P. Sesostris; and a series of Heliconiidæ representing four genera, but which looked like one species, the whole of them being found flying together. Ten or twelve new species had been obtained by Mr. Hewitson out of Mr. Belt's collection.

The President had obtained some handsome new species of Coleoptera, also from Mr. Belt, the scene of whose operations was the neighbourhood of the Chontales mines. Nicaragua was divided in the middle, the Atlantic side being forest, the Pacific side savannah and open grass-land; Chontales lay on the edge of the Atlantic belt of forest, and in consequence of the development of the mines there had been considerable felling of timber, and most of Mr. Belt's Coleoptera were brought to him by the wood-cutters: there were some very fine forms of Stenaspis, Colobothea, Amphionycha, Oncideres, Anisocerus, &c., &c., and it seemed as if the tropical types culminated in size and beauty in Nicaragua. So far as American Coleoptera were concerned (though he could not say that he had observed the same thing in other Orders), it seemed that at and near the Equator the species were comparatively dull in colour, but brighter hues were assumed both in the North and South tropics.

Mr. A. R. Wallace thought this held good in the East also. The beetles of Borneo were generally dull in colour, whilst more brilliant forms were found both in Ceylon and China, in Java and Australia. The excessive uniformity in the character of the vegetation was perhaps the cause of the prevailing dullness of the beetles found within the equatorial belt.

By an unanimous vote the Secretary was requested to express to the Rev. T. A. Marshall, on behalf of the Members of the Society, their sympathy and condolence with him on the recent loss, through the foundering of a ship between Milford Haven and Barnstaple, of the whole of his library and manuscripts and collection of insects. The destruction of his minute British Hymenoptera belonging to groups but little studied, and of the types of species characterized by Mr. Marshall, was more than a private misfortune, and was an irreparable loss to Science.

Paper read.

The following paper was read:—"Description of a new Genus and Species of Prionidæ," by Mr. Edmund Thomas Higgins.

The new form was named Ommatomenus sericatus, was allied to Tithoes and Dorycera, and was described as connecting the Acanthophorus group of the Old World with the Derobrachus group of the New World. It was found near the mouth of the Niger, and the Acanthophorus megalops of Mr. Adam White, from Fernando Po, was indicated as belonging to the genus Ommatomenus.

March 1, 1869.

H. W. Bates, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' No. 108; presented by the Society. 'Bullettino della Società Entomologica Italiana,' Anno primo, Fascicolo I.; by the Society. 'Coleopterologische Hefte,' Part iv.; by the Editor, Baron E. von Harold. 'Bidrag til Kundskab om Christianiafjordens Fauna,' af Dr. Michael Sars; by the Author. 'The Zoologist,' for March; by the Editor. 'The Entomologist's Monthly Magazine,' for March; by the Editors.

Election of Member.

Charles Horne, Esq., of 3, Bernard Villas, Upper Norwood, was ballotted for, and elected a Member.

Exhibitions, &c.

Mr. Bond exhibited specimens of Heliothis armiger from the Isle of Wight, Java and Australia. The insect had been taken in Java by Dr. Horsfield; the Australian specimens were captured by Dr. Madden.

Mr. W. C. Boyd exhibited dwarfs of Vanessa Urticæ, Smerinthus Populi, Saturnia Carpini and Pygæra Bucephala, all bred in 1868, by Mr. Davis, of Waltham Cross, and scarcely more than half the ordinary size of the species: this was attributed to rapidity of development, owing to the heat of the summer.

Dr. Wallace exhibited a number of Bombyx Yamamai and their cocoons: during last season he bred about fifty of them at Colchester, and found them to vary considerably in colour: the moth was in the habit of performing summersaults and manœuvres, like those of Cilix or Limacodes when netted. Also Bombyx Pernyi, another oak-feeding species from China, of which he had received through the Foreign Office a number of cocoons, from which the moths were hatching, and one had laid about 270 eggs: he hoped to make some useful experiments with this species, which like Bombyx Cynthia was double-brooded, but would probably be found to require a dry climate and warm soil. Also English-bred specimens of the American Saturnia Cecropia. Dr. Wallace made some remarks on the progress of sericiculture in this country and the colonies: what was principally required was an experiment on a large scale to test the commercial value of the product: with this view a gentleman in Paris desired to purchase 500 lbs. of cocoons, for which he was willing to give 25*d.* per lb.

Dr. Wallace also exhibited a moth which, on the 18th of January, 1869, he observed on the window of his room; but, under the impression that it was a small female of the common Emperor moth, left it undisturbed. On the 19th he noticed that the antennæ were pectinate, and thinking it still to be a female Saturnia Carpini with the antennæ of a male, he killed it and set it out. Closer examination showed that it was not an Emperor moth at all, and he at length bethought him of a parcel of cocoons, which he had received in 1867 from Dr. Hooker, of a Chinese Bombyx which was said to yield the "gut" of fishermen. (See Proc. Ent. Soc. 1867, p. civ.). On looking at the cocoons, none of which were productive during 1868, it was found

one of them had hatched, and there was unmistakeable evidence of the recent emergence of a moth from the pupa: he had no doubt the moth exhibited was the produce of that pupa. Mr. F. Moore recognized the species as Saturnia pyretorum (Westw. Cab. Orient. Ent. p. 49, pl. 24, fig. 2).

Dr. Wallace mentioned that he had availed himself of the sample or pattern post for the transmission of boxes of silk-worms or their eggs: so long as there was an aperture at each end of the box, which apertures might be covered with perforated zinc or other material, but left it ascertainable that there was no letter enclosed, no objection was raised by the Post-Office authorities; and he had lately sent a box by post to Japan for eggs at a cost of 4*s*., which when it last came thence as a parcel had cost 47*s*. Mr. Horne added that bird-skins were now frequently sent from India by sample post.

Mr. M'Lachlan exhibited three male specimens of Dilar Hornei (Ent. Mo. Mag. v. 239), a new species from India of a genus remarkable amongst the Neuroptera for the possession of pectinate antennæ.

Mr. Horne, by whom the species was brought to this country, said the insect was not uncommon in North-West India, on the hill sides, amongst grass in damp places, but not near water: the female had a long yellow-brown ovipositor shaped like a scimitar, which, so far from looking flexible, had the appearance of being very stiff.

Mr. Horne exhibited sheets of the inner portion of the bark of Pinus longifolia, which he had found useful in India as a substitute for cork: it was tolerably soft, and the resin was not injurious to insects.

Prof. Westwood mentioned that in the previous month he had seen exhibited at Oxford a full-grown larva of Lampyris noctiluca, which was distinctly luminous.

Mr. J. J. Weir exhibited a mass of larvæ of Tipula from Blackheath, where acres of land were so infested that there seemed to be more larvæ than earth. In Greenwich Park the grass was, at this early period, almost destroyed by them. Rooks, starlings and sparrows appeared to be busy in the neighbourhood, but no diminution in the number of the grubs was observable.

Mr. Bond mentioned that he had once known four hundred of these larvæ taken out of the crop of a pheasant.

Papers read.

Mr. Charles O. Waterhouse read a paper "On a new Genus and some new Species of Coleoptera belonging to the Family Lucanidæ."

Mr. J. Jenner Weir read a paper "On Insects and Insectivorous Birds, and especially on the Relation between the Colour and the Edibility of Lepidoptera and their Larvæ."

Mr. A. G. Butler read a paper "On some Caterpillars, &c., which are unpalatable to their Enemies."

Mr. Weir's experiments were suggested by the remarks of Mr. Alfred R. Wallace, reported in Proc. Ent. Soc. 1867, p. lxxx.: the conclusions at which he arrived were, that, as a rule, hairy and spinous larvæ were rejected by birds (unless the cuckoo were an exception); but he doubted whether the mechanical difficulty of swallowing them was the cause of their rejection, and rather thought that the hairs were the concomitant of a disagreeable quality of which they acted as an indicator; that bright and gaily-coloured larvæ were, as a rule, refused; but that smooth larvæ of a greenish or dull brown colour, such as are for the most part nocturnal in their habits, and those

which simulate the leaves or twigs of trees upon which they live, were eaten with avidity.

Mr. Butler's observations were on the consumption or rejection of larvæ by lizards, frogs and spiders; both lizards and frogs would eat hairy larvæ; and even the stings of bees had no deterrent effect upon a lizard.

These two papers led to a prolonged conversation, in which the President, Mr. Horne, Mr. A. R. Wallace, Mr. Butler, Mr. M'Lachlan and Dr. Wallace, took part.

Mr. Horne said that in India lizards were almost omnivorous, and ate bees with avidity; a friend of his, Colonel Ramsay, had hives of Apis dorsata placed near some stone walls or terraces, which were a favourite resort of lizards; they would come to the mouths of the hives, lie in wait for the bees, and take them, sting and all. Larvæ of all sorts, smooth or hairy, dull or bright, were eaten by lizards; but scorpions were rejected; bears, however, would eat scorpions, and he had seen bears turn over stones in search of scorpions, and eat them regardless of their stings. He had noticed that a common Indian species of Carabus, and all the blister-beetles, seemed to be free from attacks of any animal.

Dr. Wallace said that the larvæ of Bombyx Cynthia, which were both gaily coloured and covered with tubercles, were eaten by cuckoos, robins and tomtits: the two latter made holes in the skin and took out the inside, whilst the cuckoos swallowed the larvæ whole.

Mr. Alfred R. Wallace was pleased to find that the observations of Mr. Weir went so far to support the theory which, reasoning entirely from the analogy of what had been observed in the Heliconiidæ, he had ventured to suggest in answer to a question of Mr. Darwin's. He thought there was now a solid foundation of fact for the hypothesis that the bright colour of larvæ was protective, and was (as it were) a flag hung out to warn off their enemies. Doubtless every detail either of form or colour had its object and bearing upon the history of the creature. It was not necessary that the law should be absolute or the rule universal; he did not expect to find, on the contrary he should have been surprised if it had been found, that *all* brightly coloured larvæ were peculiarly protected, or that the bright colour of any particular larva protected it from *all* enemies; if it thereby obtained protection from a single enemy, if it was left exposed to the attack of but one enemy less than its neighbours, to that extent at least the colour gave it an advantage; the theory of protective warning supplied the reason for, and afforded a rational explanation of, the gay colouring, which in the case of larvæ could not be accounted for by sexual selection.

March 15, 1869.

H. W. Bates, Esq., President, in the chair.

Election of Member.

H. Grose Smith, Esq., of Surbiton, was ballotted for, and elected a Member.

Exhibitions, &c.

Mr. Frederick Smith exhibited specimens of Colletes cunicularia, a bee new to this country: they had been sent to him by Mr. Nicholas Cooke, by whose son, Mr. Isaac

Cooke, they were captured in the Isle of Wight, between Ventnor and Niton, in May, 1867; four males and five females were taken. It is the largest European species of Colletes, and is the C. hirta of Continental authors, which name, however, must give place to cunicularia of Linnæus, the type of which is extant in the Linnean collection.

Mr. M'Lachlan exhibited a gigantic species of Ephemeridæ, about three inches in expanse of wings. It had been received by Mr. Salvin, from Veragua; and was probably the Palingenia Hecuba of Dr. Hagen.

Mr. Butler exhibited varieties of several butterflies, captured by him in Switzerland, chiefly in the neighbourhood of Chamounix, in July and August, 1868. There were—(1) Anthocharis Cardamines, with the black spot on the fore-wings very small, the black edging confined to the tip of the wing, and the orange colour extending considerably within the black spot—this seemed to be the normal type of the insect in Switzerland; (2) Colias Edusa, remarkable for its large size; (3) Epinephele Janira, one specimen very dark, another very light in colour—the former was the common type in Switzerland; (4) Argynnis Aglaia, with the hind-wings almost entirely black, and the silvery spots on the under side covering the basal and apical parts of the wing; (5) Melitæa Athalia, four varieties, varying from almost entirely black to almost entirely fulvous; and (6) Parnassius Apollo, with small pale ocelli, the ordinary pink markings being pale yellow. Mr. Butler added that Leucophasia Sinapis, the "wood white" as we term it, was common all over Switzerland, not in woods, but in the neighbourhood of water.

Mr. Stainton, who had just returned from Italy, made some remarks on the different habits of the same species in different localities; for instance, at Cannes, Mentone, and other places in the South of Europe, Pyrameis Atalanta was the commonest hybernating butterfly. The species was to be seen everywhere, whilst in this country a hybernated specimen was never seen before April, and rarely before the time when the hawthorn is in blossom.

Mr. Hewitson sent for exhibition a number of butterflies collected in Nicaragua by Mr. Belt; there were twelve species new to Science, and several others which were not previously in Mr. Hewitson's cabinet. The Papilio mentioned at the Meeting of 15th February (*ante*, p. iv.) was believed to be the female of P. Childrenæ, a species distinct from P. Sesostris.

Mr. Hewitson also sent for exhibition two new species of Papilio, from Ecuador, whence they were received by Mr. James Backhouse. As an incident of collecting in Ecuador, it might be mentioned that the captor and his mule were thrown over a precipice together; the gentleman had his head cut and one of his arms broken, and in this plight had to ride for seven days in search of a doctor.

The President exhibited seven forms of Papilio belonging to the Machaon group. Mr. Christopher Ward had purchased the Japanese collection of butterflies from the Paris Exhibition: it included Papilio Machaon and Xuthus, and a third form, which proved to be the P. Xuthulus of Bremer, who described it as being intermediate between the other two; it was first captured in Amoor-land, and the captor took it for a hybrid between Machaon and Xuthus, until it was noticed that its time of appearance was a month earlier than either of the other species. For comparison with these Japanese forms, the President added P. Zelicaon and Asterias, and two other American forms: he observed that in Europe P. Machaon was very constant, and that the allied forms in America

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exhibited but slight variation from the same type; but in North-Eastern Asia the group appeared to be more unstable, for although the true Machaon was there found, it was associated with two other forms exhibiting greater divergency from the typical form. This was another instance, analogous to what he had before recorded respecting the Theonoe group of the genus Leptalis, in which a certain type of form was found to be constant at the opposite ends of its area of distribution, but was liable to variation in intermediate localities; thus tending to show that the development or manufacture of new species takes place, not necessarily over the whole range of distribution of the particular type, but only in limited areas of the total range, where and when the particular circumstances are most favourable to variation.

A letter from Mr. H. L. Schrader was read by the Secretary; the writer described some of his observations on species of Œceticus, from which he inferred that those species are viviparous.

Papers read.

The following papers were read:—"Descriptions of two New Species of Papilio from Ecuador," and "Descriptions of six New Species of Diurnal Lepidoptera from Nicaragua;" by Mr. Hewitson.

"Contributions to an Insect Fauna of the Amazon Valley (Coleoptera, Prionides)." By the President.

"Synopsis of the Species of Panorpa occurring in Europe and the adjoining Countries; with a Description of a New Species from Java." By Mr. M'Lachlan.

April 5, 1869.

H. W. Bates, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' No. 109; presented by the Society. 'Journal of the Agricultural Society of England,' 2nd Ser., vol. v., Part 1; by the Society. 'Mittheilungen der Schweizerischen entomologischen Gesellschaft,' vols. 1 and 2; by the Society. 'Studien an Acariden,' von Edouard Claparède; by Sir John Lubbock, Bart. 'Die Otiorhynchiden s. str. nach den morphologischen Verwandtschaftsverhältnissen ihres Hautscelet's vergleichend dargestellt, von Georg Seidlitz;' by the Author. 'Report on the Culture of the Japanese Silkworm, Bombyx Yamamai, in 1867-8, in England,' by Dr. Wallace; by the Author. 'The Insect Hunter's Year-Book for 1868,' and 'The Zoologist' for April; by the Editor, E. Newman, Esq. 'The Entomologists' Monthly Magazine' for April; by the Editors.

The following addition by purchase was also announced:—Gemminger and Von Harold, 'Catalogus Coleopterorum hucusque descriptorum,' Tom. iii.

Exhibitions, &c.

Mr. Pascoe exhibited a new genus of Diaperinæ from Espiritu Santo, in which the horns on the head between or above the eyes, which distinguish many of the males of Platydema, Diaperis, Hoplocephala, &c., were transferred to the apex of the prothorax;

the female showed a slight approach to the same formation. Also species of the European genera Apion, Attelabus, and Elleschus, recently discovered in Australia; and several remarkable unpublished forms of Curculionidæ, among which were—a new genus from Macassar allied to Oxycorynus, having the pronotum distinct from the flanks of the prothorax, with its edges serrate; a species from Batchian, with the base of the prothorax prolonged into a slender spine extending backwards half the length of the elytra; another from the same island without any claw-joint, its tarsi therefore only three-jointed; a species allied to Catasarcus, with a single claw; a peculiar globose form from Cape York, allied to Tragopus; a thick-set species from South Africa, with the base of its prothorax ensconced in the elytra; a species from Parà, of doubtful affinity, with a distinct pronotum; &c.

Prof. Westwood exhibited a male specimen, from the Oxford Museum, of the Panorpa from Java, which was described at the previous meeting by Mr. M'Lachlan as Panorpa nematogaster. Also specimens of Blatta melanocephala, which was found very destructive in Orchid-houses, feeding on the buds or young shoots.

Mr. Druce exhibited two male specimens of Papilio Zalmoxis, of Hewitson, from Old Calabar.

Mr. Bond exhibited Sciaphila communana, of Herrich-Schæffer, a moth new to Britain, captured at Wicken Fen, Cambridgeshire; also dried larvæ of Myelophila cribrella, *in situ*, within the stems of thistles.

Mr. F. Smith exhibited several species of humble-bees with their respective parasites or cuckoo-bees. Bombus subterraneus varied from yellow to entirely black, and the parasite Apathus camprestis showed similar variations in colour; the same was true of Bombus muscorum. Bombus terrestris was not liable to variation, its parasite Apathus vestalis was also constant; the same was true of Bombus lapidarius and Apathus rupestris, though the parasite in this case had dark wings. Bombus pratorum was the only moss-building species which was infested by a parasite, Apathus barbutellus, and this did not at all resemble the humble-bee. The first idea that suggested itself was that the cuckoo-bee bore resemblance to the worker of the humble-bee in order to gain access to the nest; but it was only in the social species that the parasites resembled the humble-bees, and the parasite of B. pratorum militated against the theory.

In the course of the conversation which ensued, it was suggested that an entry might be effected into the nest of a solitary bee, in the absence of the true owner, without disguise; whilst in the case of a social species, of which some of the colony would always be at home, the entry of an undisguised stranger would be detected. And in reply to inquiries, it was elicited from Mr. Smith that the moss-building Bombus pratorum was a placid bee, by the side of whose nest a person might sit with impunity; and hence it was to be inferred that this species, by reason of its different mental constitution, might more readily admit a stranger into its nest without opposition, whilst stratagem or deception was necessary to obtain access to the nests of species less peaceably disposed.

Papers read.

The following Papers were read:—

"Descriptions of New Species of Diurnal Lepidoptera." By Mr. W. C. Hewitson.

"Notes on Eastern Butterflies. By Mr. A. R. Wallace.

" Descriptions of New Species of Phytophaga, belonging to the Families Cassididæ and Hispidæ." By Mr. J. S. Baly.

" A Revision of the British Species of Homalota." By Dr. Sharp. One hundred and fifty-seven species were described, of which twenty-nine were new.

May 3, 1869.

H. W. Bates, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the donors:— 'Proceedings of the Royal Society,' No. 110; presented by the Society. 'Journal of the Quekett Microscopical Club,' No. 6; by the Club. 'Annales de la Société Linnéenne de Lyon,' vol. xvi.; by the Society. 'Verhandlungen der k. k. zool-bot. Gesellschaft in Wien,' vol. xviii., Parts 1 and 2; by the Society. 'Bulletin de la Société Imp. des Naturalistes de Moscou,' 1868, No. 2; by the Society. 'Beitrag zur Kenntniss der Coleopteren-Fauna der Balearen,' by Dr. Schaufuss. Hewitson's 'Exotic Butterflies,' Part 70; by W. W. Saunders, Esq. 'The Zoologist' for May; by the Editor. 'The Entomologist's Monthly Magazine' for May; by the Editors.

Election of Member.

Charles Owen Waterhouse, Esq., of the British Museum, was ballotted for, and elected a Member.

Exhibitions, &c.

Mr. S. Stevens exhibited a large collection of Coleoptera, sent from China by Mr. Pullinger; and read an extract from a Report on the Coffee Plantations of India, to the effect that the planters had not discovered any remedy for or preventive of the ravages of the coffee-borer, Xylotrechus quadripes.

Mr. Dunning exhibited a specimen of the common Cetonia aurata, found in a garden at New Cross on the 11th April; it was partly covered with earth, and appeared to have just emerged from its underground hybernaculum, whence it had been prematurely tempted by the first warmth of spring.

Mr. Butler mentioned that the Conocephalus from West Africa, which he exhibited on the 15th February (*ante*, p. iii.) was still alive; he had kept it in a box on a mantel-shelf at the British Museum, where it remained motionless unless disturbed, and had not eaten anything whatever.

Prof. Westwood exhibited three species of Epyris and some other Hymenoptera of doubtful position, having relations with the Proctotrupidæ, the Chrysididæ, and some of the Scoliidæ; and a Calyoza from Port Natal, with pectinate antennæ having thirteen joints in both sexes; this was identical with an insect found in gum animé, and described in Trans. Ent. Soc. ii. 56 (where the male was represented as having only twelve joints to the antennæ).

Mr. Frederick Smith exhibited both sexes of Cynips, the male of which had at last been detected by Mr. Walsh in America. The oak-apples on the black oak (Quercus tinctoria) are first observed in May, and reach their full growth in a few

weeks; by the middle of June, male and female gall-flies (Cynips quercus-spongifica, *Osten-Sacken*) emerge from a small proportion of them, say one-fourth; the remaining three-fourths do not develop flies until the autumn, and then produce gall-flies (C. q aciculata) closely allied to, yet quite distinct from, those produced in June, and out of thousands of the autumnal flies which were examined not one was a male. Mr. Walsh placed some of the autumnal form (C. q. aciculata) on oak-trees, and they created galls, from some of which were obtained the spring form (C. q. spongifica), whilst a few produced the autumnal form (C. q. aciculata), and all the latter were females. These last again were placed on isolated oaks, galls were formed by their puncturing, and from these the spring form (C. q. spongifica) was again obtained. From which observations it was to be inferred that the two forms are not distinct species, but dimorphous forms of the same species. From the red oak (Quercus inanis) a different gall was obtained, smaller than the former, and the central cell not woody: from these galls came male and female gall-flies (Cynips quercus-inanis, *Osten-Sacken*), which were undistinguishable from the spring form of C. q. spongifica, but no autumnal form of this fly had been discovered. Mr. Walsh felt himself compelled to consider the flies distinct, because the galls were different and were obtained from distinct species of oak; but the gall-flies were exactly alike. An account of Mr. Walsh's observations had been given in "The American Entomologist," of which Mr. Smith mentioned that, though 6000 copies were struck off, the early numbers were already out of print.

Mr. Charles Horne stated the result of his observations in India on various insects, as regards their liability to or freedom from the attacks of animals, birds, lizards, &c. In corroboration of his previous statement (*ante*, p. vii.) he might mention that the brown or yellow bear (Ursus isabellinus) was described by Dr. Jerdon as eating scorpions, insects, honey and fruit; the Himalayan black bear (U. Tibetanus) was very fond of locusts, but with this exception did not affect insects; the black bear (U. labiatus) was said to "suck the grubs of large Longicorns" in the Neilgherries, having first dug them out of the soil, but this bear was not found among the hills of the North-West Provinces, and Mr. Horne was not personally acquainted with its habits. Anthia quadrimaculata, all the species of Blaps, and all the observed Mylabridæ and Geotrupidæ, were refused by everything. A brightly coloured locust was refused by birds and lizards; it exuded a yellow acrid juice with a pungent odour. The wingless female Lampyridæ were not eaten, though perhaps the males might be. Small round hard Coleoptera, and Mantispæ, were refused by the Gecko lizards, which were otherwise omnivorous. Termites in all their stages, and migratory locusts, were generally eaten by birds, frogs and lizards; even the smallest birds would take locusts, as would also squirrels and mice. Hemiptera were generally refused. Mantidæ were freely eaten by birds. Merops viridis and other birds eat bees; the honey-buzzard tears off the comb of bees and wasps, and heedless of their stings sits and eats the honey, wax, grubs, and all. Crows eat all visible caterpillars, but prefer smooth-bodied ones. King-crows (Dicrurus) eat all insects on the wing; a large fat-bodied moth with red under-wings was a great favourite with them. Sparrows delight in the Noctuidæ; so do the hunting spiders, and Mr. Horne was at a loss to understand why the spiders were not carried off by the moths. Most of the thrush tribe gobble up almost indiscriminately every insect or caterpillar they find. Sparrows had been seen to refuse cockroaches, but other birds would eat them. Most of the Blattidæ were

rejected by birds. The Ichneumonidæ appeared to enjoy immunity from the attacks of birds, which Mr. Horne attributed chiefly to an acrid smell which most of them emitted. He had seen Dytiscidæ taken by birds, and dropped from inability to eat them. Iulidæ were totally rejected by all animals and birds.

Mr. Horne also mentioned that he had once known a large spider (or rather a Galeodes) killed by the sting of a wasp upon which he was feeding; the Galeodes finished his meal, but sickened and died shortly after. He inquired whether it was from fear, or for the purpose of annoyance, that humble-bees eject fluid when disturbed; and mentioned a similar occurrence which he observed in a hornet at Benares: the hornet was on a window, and, on being touched with a pencil, ejected a clear fluid along the glass, in several lines of from one inch to two inches in length. Mr. Horne also exhibited a sketch from nature of a moth and a hunting spider: the moth was at rest on a small bamboo in a summer-house, and the spider was quietly feeding upon the moth; the question was, how did the spider catch and hold the moth, without any disturbance of the latter? The moth must have been alive when the spider seized him, for the spider would not have cared to suck a dead body.

Mr. M'Lachlan had seen a Phalangium which had captured, and held in captivity, a Plusia Gamma under similar circumstances.

Mr. M'Lachlan exhibited a white ant which had been brought in all its stages by Mr. Melliss from St. Helena. (See Proc. Ent. Soc. 1863, p. 185; 1866, p. xii.) The insect was said to have been introduced into the island from the coast of Africa, but it was not referable to any described African species; it had rather the appearance of a West Indian or Brazilian species, and resembled the Termes tenuis of Dr. Hagen.

Mr. M'Lachlan also exhibited a number of black Poduræ, probably the same species as that exhibited by Mr. G. S. Saunders (Proc. Ent. Soc. 1867, p. lxxxv), the Anura tuberculata of Templeton: the so-called "blight" fell over a duck-pond and farm-yard near Hungerford on the 10th April, and looked just as if a sack of soot had been emptied out; it floated for some time on the pond, but soon disappeared from the farm-yard. Mr. M'Lachlan added that he had only that morning found a number of small white Poduræ in his own house at Lewisham: some flowers were in a room, one of the flower-pots had been removed, leaving a saucer containing water, on the top of which the spring-tails were floating; but on returning two or three hours later they were all drowned.

Prof Westwood suggested that they must have passed from the flower-pot into the water before the removal of the former; and Mr. Jenner Weir said that during the present spring he had observed them on several occasions under flower-pots.

Papers read.

The following papers were read:—

"Notes on Eastern Butterflies," (Continuation, on the genus Diadema); by Mr. Alfred R. Wallace.

"Descriptions of new or little-known Forms of Diurnal Lepidoptera;" by Mr. A. G. Butler.

New Part of 'Transactions.'

The first part of the "Transactions for 1869" (published in April) was on the table.

June 7, 1869.

H. W. Bates, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' No. 111; presented by the Society. 'Proceedings of the Zoological Society,' 1868, Part 3; by the Society. 'Horæ Societatis Entomologicæ Rossicæ,' Vol. vi., No. 2; by the Society. 'Berliner Entomologische Zeitschrift, 1868, Parts 3,4,—1869, Parts 1,2; and 'Verzeichniss der Käfer Deutschlands,' von Dr. Kraatz; by the Entomological Society of Berlin. 'Illustrations of Diurnal Lepidoptera, Part IV., Lycænidæ'; by the Author, W. C. Hewitson, Esq. H. de Saussure, 'Reise der Oest. Fregatte Novara, Hymenoptera;' 'Etudes sur quelques Orthoptères du Musée de Genève;' 'Etudes sur l'Aile des Orthoptères;' 'Orthopterum Species novæ aliquot;' 'Phasmidarum novorum Species nonnullæ;' and Prof. Yersin, 'Note sur la dernière Mue des Orthoptères;' 'Note sur les Mues du Grillon champêtre;' 'Note sur le Xiphidium brunneum;' presented by Sir John Lubbock. 'The Zoologist,' for June; by the Editor. 'The Entomologist's Monthly Magazine,' for June; by the Editors.

The following addition by purchase was also announced:—'Récherches sur la Faune de Madagascar: Insectes,' par S. C. Snellen van Vollenhoven et Baron Edm. de Sélys Longchamps.

Exhibitions, &c.

Mr. Druce exhibited a collection of butterflies from Borneo, containing several novelties and rarities; amongst them a new Ornithoptera, a rare Charaxes, &c.

Mr. Stainton exhibited two specimens of a new species of Tineina, bred from larvæ sent by M. Millière, who found them at Cannes on Osiris alba. The bushy tufted palpi of the insect resembled those of Anarsia, and its habit was to sit with its head depressed as if resting on the palpi; the markings of the wings were like Zelleria or Swammerdamia. Mr. Stainton had seen the moth at Vienna and in other Continental collections, but the discovery of its habits and transformations was due to M. Millière, who proposed to describe it under the name of Paradoxus (n. g.) Osiridellus.

Mr. Stainton also exhibited drawings of the larva and pupa-case of Gelechia atrella, and was now able to corroborate the observation of Mr. Jeffrey (see Proc. Ent. Soc. 1866, p. xxv.) that this species is a Hypericum feeder. At the previous meeting of the Society, Mr. De Grey had given Mr. Stainton some Hypericum stems containing larvæ, which had since produced Gelechia atrella; when full fed, the larva cuts off the terminal portion of the stem, which appears to be slit up the side for the purpose of flattening it, and by spinning together the edges it forms a flexible case, within which it turns to the pupa.

Mr. F. Smith exhibited a bee which he had found on the previous day at Southend, in grass, so completely covered with larvæ of Meloe that it was impossible to determine the species of the bee until the greater part of the parasites had been removed; he did not remember to have ever found larvæ of Meloe so late in the season; there were forty or fifty of them on the bee when exhibited, when captured there must have been 300 or 400; the bee proved to be Melecta armata, itself a parasite in the nests of Anthophora.

Mr. F. Smith exhibited living specimens of Physonota gigantea, a remarkably beautiful species of Cassididæ, which however loses all its colour within two or three days after death, indeed some of them had faded and become dull during life; they were brought to Liverpool from Central America in a cargo of logwood, and were said to have dropped out of the cracks of the wood.

Mr. F. Smith exhibited a smooth corneous luminous larvæ from Uruguay, which he supposed to be a Pyrophorus. When placed in a dark room, the head appeared bright red, and each side showed ten bright green spots; the lateral spots were almost always visible (in the dark), the red only occasionally, and sometimes would remain invisible for ten minutes together; the colours were so intense that Mr. Smith compared them to the red and green signal-lamps of a railway train. It was said by the sender to be capable of living for two or three months without food, if placed in earth which was kept damp and occasionally changed.

Mr. Pascoe exhibited a beetle* brought by Mr. Du Boulay from West Australia, which possessed a very peculiar formation of the elytra with remarkable elevations on the hind part thereof, and which seemed intermediate between Hister and Claviger.

Prof. Westwood exhibited drawings of two new species of the Ectrephes of Pascoe (Proc. Ent. Soc. 1866, p. xvi. = Anapestus of King, in Trans. Ent. Soc. N.S.W. for the same year), which genus he now considered to be a strangely modified form of Ptinidæ; and of some other forms (Polyplocotes, n. g., &c.) which connected Ectrephes and Ptinus. Also, a new Articerus, a new Paussus, &c.

The Secretary read a letter from the Secretary of the Flax Improvement Association of Belfast, respecting the damage done by a small beetle to the flax crop, especially whilst the plant was in the seed-leaf. The species was determined by Mr. Janson to be the Thyamis parvula of Paykull.

Papers read.

The following papers were read:—

"Notes on Eastern Butterfles" (continuation, Eurytelidæ and Libytheidæ); by Mr. Alfred R. Wallace.

"Observations on Lucanoid Coleoptera; with Remarks on some new Species, and on the present Nomenclature; accompanied by a Revised Catalogue of the Species," by Major Parry. (First Part).

"Remarks on the Genus Ectrephes, and Descriptions of new Exotic Coleoptera," by Prof. Westwood.

"Notes on Chalcididæ; and description of a new Species of Megastigmus," by Mr. Francis Walker.

"Descriptions of new Species of the Genus Pison; and a Synonymic List of those previously described," by Mr. Frederick Smith.

"Descriptions of new Genera and Species of Exotic Hymenoptera," by Mr. F. Smith.

New Part of 'Transactions.'

The second part of the 'Transactions' for 1869 (published in May) was on the table.

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* The *Chlamydopsis striatella* of Westwood, Tr. Ent. Soc. 1869, p. 318.

July 5, 1869.

Frederick Smith, Esq., Vice-President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Transactions of the Linnean Society,' Vol. xxvi., Pt. 3; presented by the Society. 'Stettiner Entomologische Zeitung,' 1869, Nos. 1—6; by the Entom. Soc. of Stettin. 'Proceedings of the Royal Society,' No. 112; by the Society. Butler's 'Lepidoptera Exotica,' Pt. 1; by E. W. Janson, Esq. 'Descriptions of new Genera and Species of Tenebrionidæ from Australia and Tasmania,' by F. P. Pascoe; by the Author. 'The Zoologist,' for July; by the Editor. 'The Entomologist's Monthly Magazine,' for July; by the Editors.

The following additions by purchase were also announced:—Thomson, 'Skandinaviens Coleoptera,' Vol. ix. Gemminger and von Harold, 'Catalogus Coleopterorum,' Vol. iv.

Election of Member.

Albert Müller, Esq., of Eton Villa, Sunny Bank Road, South Norwood, was ballotted for and elected a Member.

Exhibitions, &c.

Mr. J. Jenner Weir exhibited a gigantic tick, nearly an inch in length, and half an inch in breadth: it was found on a Greek tortoise.

Mr. Colvile Barclay (who was present as a Visitor) gave an account of the damage done to the sugar cane in Mauritius by a species of Coccus, the "pou à poche blanche," or "pou blanc." See Proc. Ent. Soc. 1864, pp. 25, 51.

Mr. Frederick Smith exhibited drawings of the luminous larva shown at the previous Meeting (*ante*, p. xv.), and supposed to be a Pyrophorus. Dr. Candèze and Prof. Schiödte (who was present as a Visitor) were both of opinion that the larva belonged to the Elateridæ, and were equally of opinion that Mr. Andrew Murray's Astraptor illuminator (Journ. Linn. Soc. Zool., vol. x., p. 74, pl. i.) was not an Elater.

Mr. F. Smith exhibited a living male of the field cricket, Acheta campestris, found near Farnham; and remarked that though he required to be placed in the sun to make him begin his song, moisture seemed to give him an additional stimulus and made him sing the louder.

Mr. F. Smith also exhibited specimens, some of them alive, of Pissodes notatus, from Bournemouth, showing great variation in size.

Mr. Pryer exhibited a specimen of Eupithecia togata, taken in the previous month; the occurrence of the species in this country had not been recorded for some years. The locality was not stated. Mr. Dunning mentioned that he had taken the insect at Brandon, Suffolk, in 1849.

The Hon. T. De Grey exhibited three specimens of Cosmopteryx orichalcea, from Wicken Fen, Cambridgeshire; and six of what Prof. Zeller held to be a dark variety of Carpocapsa Juliana, though they were (part of a larger number) bred from beech in April.

Mr. Wakefield (who was present as a Visitor) stated the result of his entomological experience in New Zealand, apologising for the scantiness of his information on the

ground that the whole of his collections had perished in the burning of the ship "Blue Jacket." As in mammals and birds, so in insects, there seemed a paucity both of species and specimens, and a poverty of appearance about the few that did occur. Mr. Fereday had not been able to get together more than fourteen or fifteen species of butterflies, and 250 of moths. Mr. Wakefield himself had obtained perhaps 120 species of Coleoptera, thirty or forty of Hymenoptera, and about 150 of Diptera. There was generally a close similarity to British species, but usually of an impoverished and inferior type. He had taken a clear-wing moth which he believed to be absolutely identical with Trochilium tipuliforme, but this species had probably been imported into New Zealand with currant bushes.

The Secretary read a letter from Mr. C. A. Wilson, Corresponding Member, dated "Adelaide, 21st April, 1869." The following are extracts:—

"Myrmeleonidæ.—We have had for some years past about seven known species of Myrmeleon and the same number of Ascalaphus, with few exceptions all found near Adelaide, though the greater part in each genus are very rare or scarce in individuals. These have long, doubtless, been named in English Museums, but we have not the names out here. All these insects are very fond of settling on the wire fences now used with post and rail all over the country for fencing; the size of the wire seeming to suit the grasp of their feet as well or better than a twig might do, and where they can rest undisturbed either by adjacent twigs or the motion of the object grasped. The species of Myrmeleonidæ lie with all their limbs flat along the wires, looking at a little distance merely like a gradual thickening and then decreasing of the metal, acting with their motionless habits and grayish colour quite as a passive means of defence by deception, one of the many ways in our insect world out here, in which they have "protective resemblances." Our common Ascalaphus while on the wing flies like the Myrmeleons, heavily or lazily, and soon settles, but places itself in a very different attitude,—it may be also a deceiving one: after the legs are arranged, its antennæ are stuck out straight before it, the knobs resting on or a little raised from the wire, but the abdomen is raised pointing upwards at an angle of 45°. All that I have seen in this position (as many as nine in a day) seem to have been females. The morning is the best time to see them, as, if the wires afterwards become hot in the December sun, the Ascalaphi soon disappear; they are also quite motionless in this singular position, but apparently on the watch, as they can mostly, though not always be taken by a guarded motion of finger and thumb.

"Mason Wasps.—In the month of December I took my usual annual walk to a celebrated insect locality in the Mount Lofty range of hills N.E. of Adelaide, about six miles up a gully called Stewart's Gully ..... 'Whiz' came by a wasp with purple and yellow body [specimen enclosed; pronounced by Mr. Frederick Smith to be Paragia tricolor]. It hovered over the ground for a few minutes, and then went prone to earth and disappeared; on looking about I found a little chimney made of earth, down which the wasp had evidently gone: this structure was about half an inch in height and one-third of an inch in the diameter of its opening at the top, straight down the sides, and placed over a hole of the same size. With slight pressure, and without breaking it, I removed the chimney; and then its use became apparent, for, moved by the "gully breezes," little stones and bits of leaf came rolling down the incline, and several tumbled into the unprotected hole. I watched for a few minutes, but the tenant did not come out; and as I turned away, up flew another wasp of the

same species, and at once went down another chimney but a few feet off, and which, from its similarity to the earth and stones around, I only discovered by this means. Presently a louder whizzing noise, and swiftly came two more wasps together: one of these seemed frightened and flew off for a time, but the other made great sweeps to and fro; I observed the object *aimed at*, and quickly removed the little structure before the builder in one of its curves came round again,—then, without hesitation, pausing, or being puzzled, it went directly down the uncovered hole, I must say much to my surprise. I likewise took the chimney of a fifth wasp (which came soon afterwards), after it had gone below. These little buildings were all removed entire, but easily broke afterwards, having no hold on anything and the sides being very thin; meantime the first seen wasp had emerged from its cell, as it now returned and went below a second time. I did not observe that any of these (I concluded all to be females) carried any caterpillars or other food to their young (if any) in these subterranean dwellings,—perhaps the eggs were not laid or the young yet emerged: all these five domiciles were within a few feet of each other, and full six feet from the last was a sixth chimney, but the owner was not visible. These insects can, therefore, hardly be called gregarious, but had (as in the case of the holes made by the females of several of our Mutillidæ) merely placed their dwellings thus contiguous, the situation being most suitable, and perhaps from a little desire for companionship: these holes might also serve in future seasons for the young broods, and increase in numbers."

Papers read.

The following papers were read:—

"Notes on Eastern Butterflies" (continuation); by Mr. Alfred R. Wallace.

"On the Australian Species of Tetracha;" by Mr. Edwin Brown.

New Part of 'Transactions.'

Part 3 of the "Transactions for 1869," containing the conclusion of Dr. Sharp's Revision of the British Species of Homalota, published in June, was on the table.

NOV. 1869

November 1, 1869.

H. W. Bates, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' Nos. 113, 114; 'Journal of the Linnean Society,' Zoology, No. 46, and 'Proceedings,' 1868-69; 'Proceedings of the Zoological Society,' 1869, pt. 1; 'Journal of the Agricultural Society,' ser. 2, vol. v. pt. 2; 'Annales de la Société Entomologique de France,' 1869, pt. 1; 'Annales de la Société Entomologique de Belgique,' vols. i.—xii.; 'Mémoires de la Société de Physique, &c., de Genève,' vol. xx. pt. 1; 'Mittheilungen der Schweizerischen Entomologischen Gesellschaft,' vol. iii. Nos. 1, 2; 'Bulletino della Società Entomologica Italiana,' vol. i. pt. 3; 'Bulletin de la Société des Naturalistes de Moscou,' 1868, No. 3; 'Transactions of the American Entomological Society,' vol. ii. Nos. 1, 2; 'Memoirs read before the Boston Society of Natural History,' vol. 1, pt. 4, and 'Proceedings,' vol. xii. Nos. 1—17; 'Memoirs of the Peabody Academy of Sciences,' vol. i. No. 1; presented by the several Societies. 'Report of the Commissioner of Agriculture for 1867;' by the United States Government. 'Record of American Entomology for 1868;' by the Editor, Dr. Packard. 'List of the Lepidoptera of North America,' pt. 1, by A. R. Grote and C. T. Robinson; by the Authors. 'Entomological Notes,' Nos. 1, 2; 'Supplement to a List of the Butterflies of New England;' 'Check List of the Butterflies of New England;' 'Notes on the Stridulation of some New England Orthoptera;' and 'Catalogue of the Orthoptera of North America described previous to 1867,' by Samuel H. Scudder; by the Author. 'Entomological Correspondence of T. W. Harris,' edited by S. H. Scudder; by the Editor. 'The Canadian Entomologist, vol. i.; 'Betrachtungen über die Verwandlung der Insekten im Sinne der Descendenz-Théorie,' von F. Brauer; 'Notes sur les Neuroptères de Mingrélie,' par le Baron de Selys Longchamps, et par R. M'Lachlan; by R. M'Lachlan, Esq. 'Coleopterologische Hefte,' No. 5; by the Editor. 'Sepp, Nederlandsche Insecten,' vol. ii. Nos. 17—38; by M. Snellen van Vollenhoven. 'Synopsis des Scolytides,' by the Author, Dr. Chapuis. 'Exotic Butterflies,' Parts 71, 72; by W. W. Saunders, Esq. 'Lepidoptera Exotica,' pt. 2; and 'Cistula Entomologica,' pt. 1; by E. W. Janson, Esq. 'Descriptions of some New Species of Lamiidæ,' by the Author, F. P. Pascoe, Esq. 'Considerations on the Neuropterous genus Chauliodes and its allies;' by the Author, R. M'Lachlan, Esq. 'On the Ailanthus-feeding Silkworm;' by the Author, W. F. Kirby, Esq. Three Tracts by the Baron de Chaudoir; seven by Prof. Ballion; and twenty-two Tracts by M. H. Lucas; presented by the Authors respectively. 'The Zoologist,' August to November; by the Editor. 'The Entomologist's Monthly Magazine,' August to November; by the Editors.

The following additions by purchase were announced:—'Beschreibung europäischen Dipteren,' von Hermann Loew; erster Band. 'Bericht der Entomologie während der Jahre 1865 und 1866,' von Dr. A. Gerstaecker; zweite Hälfte.

Exhibitions, &c.

Mr. Janson, on behalf of Dr. Power, exhibited the following seven species of Coleoptera, all new to the British list:—(1) Triarthron Maerkelii, *Schmidt*, taken

near Esher, 23rd July, 1869 (also taken by Mr. Oliver Janson, at Shirley, on the 7th August); (2) Silvanus similis, *Erichson*, at Esher, 4th August, by sweeping; (3) Niptus gonospermi, *Duval*, twelve or fourteen specimens taken by Mr. J. B. Syme on an old wall in the Orkneys; (4) Bruchus lentis, *Boheman*, at Birch Wood in May, and Gravesend in June; (5) B. nigripes, *Gyllenhal* (which in Kraatz's new Catalogue is said to be B. viciæ, *Oliv.*), at Devil's Dyke, Brighton, in May; (6) B. nubilus, *Boheman*, near Surbiton and at Gravesend, in June (this in the Stettin Catalogue is said to be B. luteicornis, but in Kraatz's new Catalogue it is made a distinct species; it differs much in the form of the thorax, markings, size, &c., and is more like B. seminarius); (7) B. canus, *Germar*, at Gravesend, in June (this in the Stettin Catalogue is made identical with B. cisti, *Fabr.*, but it differs from ordinary specimens of that species in the shape of the thorax, length of antennæ, more elongate form, and peculiar gray colour; it is more like B. loti: a specimen in the European collection of the British Museum, named by Germar and deposited by Walton, agrees exactly with the Gravesend specimens). All these four species of Bruchus were found in essentially wild places, far removed from granaries or depositories of leguminous seeds, and were all taken fortuitously by sweeping. And lastly, Phratora cavifrons, *Thomson*, taken at Esher in June, also at Cowley and Darenth, on poplars: introduced into the British list by Dr. Sharp, in Ent. Mo. Mag. v. 100.

Mr. F. Smith exhibited Meloe rugosus of Marsham (= autumnalis of Leach, punctatus of Stephens), a species not captured for the last thirty years, but formerly taken, according to Stephens, near Margate. About three weeks previously Mr. Smith, being near Prittlewell, Essex, went to the nest of a species of Anthophora, in which M. proscarabæus and other species are usually found, and by accident came upon a couple of dozen specimens of M. rugosus among grass in the neighbourhood of the nest, crawling about at the roots: he hoped to have kept them alive, but on the second day of their captivity an indiscriminate fight was commenced, in which both sexes joined; only four escaped mutilation, all the rest losing legs and anteunæ and being reduced to fragments: the abdomen of each of the females was afterwards opened, and it appeared that with one exception all had deposited their eggs, which rendered their pugnacity still more remarkable. A subsequent visit to the same locality yielded five more specimens of the beetle. It was observable that this made the fourth species of Meloe found in the nest of the same kind of bee.

Mr. Grut exhibited some Coleoptera captured by M. Théophile Deyrolle near Trebizonde, including four new species of Carabus, C. robustus, C. ponticus, C. Theophili, and C. Gilnickii.

Mr. M'Lachlan exhibited the transformations of Mantispa pagana, which had been discovered by Dr. Brauer, of Vienna. The species was parasitic in the nest of a spider (Lycosa): the young larvæ were of the ordinary Neuropterous type, but when nearly full grown their legs almost disappeared, and the larvæ were reduced to almost footless maggots: the pupa was enclosed in a cocoon, and was of the ordinary Neuropterous form, like the Hemerobiidæ, to which doubtless the Mantispidæ were closely allied. Now that the habit of one species had been detected, it might be anticipated that the whole genus Mantispa would prove to be parasitic on spiders; the eggs were probably laid in the egg-bag of the spider, and the larvæ would feed on the young spiders, or perhaps in their early stage on the eggs.

Mr. Albert Müller exhibited a large number of galls on various plants, and called

particular attention to two kinds of excrescence on the leaf-stalk of the maple (*Acer campestre*), described in the following note:—

"*Firstly*. A Dipterous gall formed by a slender, club-like, reddish swelling of the petiole, sometimes in its middle, sometimes at its junction with the leaf; cell one, occupying the whole length of the gall, and tenanted by the white larva of a Dipteron as yet unknown to me, but which I am certain is *not* a Cecidomyia. In September, 1868, and again in the same month this year, I met with this gall on the identical maple-bush in a hedge-row near Shirley, but until now all my attempts at rearing the fly have utterly failed.

"*Secondly*. Also on the petiole of the maple-leaf, a series of spur-like, solid red excrescences, standing in a row, each about half a line high. These I am inclined to attribute to the same Acarus aceris of Kaltenbach which causes the well-known pear-shaped red galls on the leaves of this tree. But whether this be so or not, it is at any rate worth while to point out, that insect agency can produce, on thornless plants, excrescences closely resembling, or perhaps identical with, the natural thorns so commonly met with in other groups of the vegetable kingdom."

Mr. Müller mentioned that the collection of galls formed by the late Mr. Wilson Armistead had been placed in the Museum of the Leeds Philosophical Society.

Mr. Cutter (who was present as a Visitor) exhibited, on behalf of Mr. Christopher Ward, several Diurnal Lepidoptera, including the female of Ornithoptera Brookeana, various species of Charaxes, Papilio Zalmoxis, and a specimen of Papilio Antimachus, captured one hundred and fifty or two hundred miles inland from Old Calabar. Of this gigantic and remarkable butterfly the only example hitherto known was collected by Smeathman for Drury a century ago, was figured by Drury and by Donovan, and was finally taken with Drury's collection to Australia by William Sharp Macleay.

Mr. Butler corrected an error in his paper (Tr. Ent. Soc. 1869, p. 273), where it is stated that Argynnis Aglaia and Niobe show every sign of being one and the same species; for Aglaia read Adippe. And as to the occurrence of the form Niobe in Britain, see Newman's 'Entomologist,' iv. 351.

Mr. Wormald exhibited a small box of butterflies sent from Shanghai by Mr. W. B. Pryer. Amongst them were Argynnis Midas, and a beautiful species of Anthocharis with falcate wings, apparently identical with the Japanese A. Scolymus.

Mr. Dunning exhibited half a dozen moths bred and sent by Mr. E. Holdsworth, of Shanghai. One was Heterusia remota (Walker, Cat. Lep. Het. B. M. p. 431), the larvæ of which were found by Mr. Holdsworth in great numbers at Van Vun, about six miles west of Soochow: the cocoon was described as "of very white colour, and of a very paper-like nature." The other specimens were the subject of the following extract:—

"The specimens of a Bombyx have been reared by myself, from larvæ found feeding upon pine and dwarf oak at the hills near Van Vun. The larvæ when found were full grown, and hundreds of them had already spun their cocoons amongst the needles of the pine trees, and so plentiful were they that every tree had three or four cocoons on it. The following is a description of the larva as it appeared shortly before spinning its cocoon. *Body*.—Ground colour black or dark brown, covered with very short lightish brown hairs, having a lighter shade towards the sides; down the back two lines of small tufts of hair, half black and half white, placed on each segment; along

the sides, tufts of fine hair, bushy at the base and of a lighter shade there, almost white, the hair getting gradually longer towards the head, where it is fully one-fourth of an inch long; round the head a fringe of short light brownish hair; on the second and third segments are two tufts of hair, reaching across the back from side to side, the front half of a deep velvetty red-brown colour, the rear half white; on the sides of the first, second and third segments are small brown tubercles. *Head.*—Large, round, with flat front. *Legs.*—Red-brown, the pro-legs reddish brown of velvetty appearance, the two last legs (anal segment) formed like a lappet. The larvæ were found in the first week in May, and spun up immediately after; the moths came out in the last week in May."

The five specimens had been examined by Mr. F. Moore, and after comparison with the British Museum collection were returned to Mr. Dunning with the following names:—(1) a female specimen, Oeona punctata (Walker, Cat. &c., p. 1418), and two males, probably of the same; (2) a female, Lasiocampa remota (Walker, Cat. &c., p. 1439); and (3) a male, Lebeda hebes? (Walker, Cat. &c., p. 1462). It remains to be ascertained whether Mr. Holdsworth confounded distinct kinds of larvæ, or whether Mr. Walker in the same volume described one species under three different names and as belonging to three different genera.

The President exhibited a coloured drawing of a large larva, found by Mr. Henry Birchall on the trunk of an Avocado pear tree in the province of Mariquita, New Granada, the whole appearance of which closely simulated that of one of the most poisonous snakes of the country, the anterior segments being dilated and having a large pupillate spot on either side representing the eye of the snake. The moth was not reared, but it was doubtless a Chœrocampa. The President had already recorded the occurrence of a similar snake-like larva in Trans. Linn. Soc. xxiii. 509.

Mr. Fry mentioned that he too had seen in Brazil larvæ resembling snakes of the country.

Prof. Westwood read the following note by Prof. Stål, of Stockholm, on the entomological collections existing in Sweden, which contain the type specimens of Swedish authors:—

"At the Museum of Stockholm we have the following type collections of insects—

(1) The collection of De Geer (types to his 'Mémoires').
(2) The types to Paykull's Monogr. Histeridum.
(3) „ Paykull's Fauna Suecica.
(4) „ Paykull's Monogr. Staphylinorum.
(5) „ Fallén's Diptera Sueciæ.
(6) „ Schönherr's Gen. et Spec. Curculionidum.
(7) „ Schönherr's Synonymia Insectorum (the species described from Schönherr's collection).
(8) The types of the species which Gyllenhal described in Insecta Suecica from Schönherr's collection.
(9) Types of Dalman.
(10) „ Fries.
(11) „ the species which Billberg described in Nov. Act. Reg. Soc. Sci. Upsal. vii. 272.

(12) Types of Billberg to the species described in Monogr. Mylabridum from Schönherr's collection.
(13) Types of a number of species described in Sahlberg's Nov. Ins. Species from Schönherr's collection.
(14) Types of Boheman.
(15) „ Stål.
(16) „ Holmgren's Ichneumonidæ.
(17) „ Thomson's Proctotrupidæ.
(18) „ Wallengren's Lepidoptera.

"Of these the types of De Geer, Paykull, Fallén, Schönherr, Billberg, and Sahlberg, and the types of Dalman which were described from Schönherr's collection, are separated from the chief collections of the Museum.

"In Stockholm are also the types of the species described in the 'Voyage of the Eugenie,' and in the various papers on South African insects collected by Wahlberg.

"In Upsala are the following collections—

(1) The types to Linné's Museum Ludovicæ Ulricæ.
(2) The collection of Thunberg.
(3) The collections of Gyllenhal (containing the types to his Insecta Suecica, and various types to Schönherr's Synonymia Insectorum).

"In Lund there are

(1) The collections of Zetterstedt.
(2) „ of Dahlbom.
(3) „ of Thomson.
(4) „ of Ljungh.

"Thomson's collection is private: the others belong to the University.

"These are, I think, all the collections in Sweden containing types of Swedish authors."

Prof. Westwood added that at Copenhagen the collections of Westermann are preserved intact in a special room of the Museum.

Paper read.

Mr. W. F. Kirby communicated a paper "On the Diurnal Lepidoptera described in Gmelin's edition of the Systema Naturæ."

New Parts of 'Transactions.'

Part 4 of the 'Transactions for 1869' (published in July), and Trans. Ent. Soc. 3rd ser. vol. 3, part 7 (the conclusion of the volume on Malayan Longicorns, published in October), were on the table.

November 15, 1869.

H. W. Bates, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—"Catalogue of Scientific Papers," Vol. iii.; presented by the Royal Society. Nine Tracts, by Dr. Leconte; presented by the Author.

By purchase:—Gemminger and Harold, 'Catalogus Coleopterorum,' Vol. 5.

Election of Members.

The following gentlemen were severally balloted for, and elected:—As Members, Messrs. D. J. French, of Chatham; and C. G. Websdale, of Barnstaple: as Annual Subscribers, Messrs. S. J. Barnes, of Birmingham; N. E. Brown, of Reigate; E. M. Janson, of Chontales, Nicaragua; O. E. Janson, of Highgate; W. H. Pearson, of Birmingham; and W. Douglas Robinson, of Dalbeattie.

Exhibitions, &c.

Mr. F. Smith, on behalf of Mr. Edwin Brown, exhibited a locust, several specimens of which had been quite recently captured at Burton-on-Trent: it appeared to be identical with a species of which the British Museum possesses five examples from North Bengal. The specimen exhibited was found in the yard of a brewery; and Mr. M'Lachlan suggested that it had probably been introduced in an empty returned ale-cask.

With reference to a recent article in the 'Annals and Magazine of Natural History,' in which Mr. Andrew Murray contends that Rhipiphorus is not a parasite, but only an inquiline in the nests of wasps, Mr. F. Smith desired to recall attention to the observations of the late Mr. S. Stone, recorded in Proc. Ent. Soc. 1864, pp. 62—66. On p. 64, Mr. Stone stated that on opening the closed cells of a nest of the common wasp, he had found a larva of Rhipiphorus firmly attached to the full-grown larva of the wasp, the mouth of the former buried in the body of the latter just below the head; and that in forty-eight hours it consumed every particle of the wasp-larva with the exception of the skin and mandibles. In another nest, which was destroyed by means of gas-tar, Mr. Stone also discovered a small larva of Rhipiphorus firmly attached to its victim, so firmly that when immersed in spirits they remained attached just as they were before death. This identical pair, preserved in spirits, and still *in situ*, was exhibited by Mr. F. Smith, together with numerous other larvæ and pupæ of Rhipiphorus which were placed in his hands by Mr. Stone. One of Mr. Murray's objections to the carnivorous propensity of Rhipiphorus was the fact that he had found the pupa of Rhipiphorus and the pupa of the wasp in the same cell: it appeared, however, that both were of stunted growth, and it was a matter of common experience that larvæ occasionally spin up before they are full fed, even when food is obtainable, which might have been the case with this Rhipiphorus larva: the attacks of parasites are not always fatal, but many Hymenoptera appear as well as their parasites, *e.g.* Stylops and the bee. Having regard to the known carefulness and accuracy of observation of Mr. Stone, Mr. F. Smith, notwithstanding certain difficulties raised by Mr. Murray which he was not at present prepared to explain, did not hesitate to re-affirm his belief

that Rhipiphorus is a larvivorous parasite, and not a mere guest which enters the nest of the wasp and shares the food of the legitimate occupants.

Mr. Pascoe exhibited some Australian Heteromera, including new species of Helæus, Byrsax, Seirotrana, &c., and two new genera. One species of Saragus (undescribed, and for which the name S. floccosus was proposed), was remarkable from being covered with a peculiar fungoid growth, which was said by the captor to occur on the living insect, and also (or a similar growth) on the trees which the beetle frequented. This growth had been examined by Mr. Currey, and was pronounced to be truly fungous, in fact an Isaria, the early stage of a Sphæria. Several specimens of the Saragus had been seen, all with the Isaria in the same stage of development.

Mr. Wallace enquired whether the supposed fungus had been microscopically examined, as it seemed highly improbable that a living animal should habitually have a living vegetable growing on it. More probably, if it really existed during the life of the beetle, it was a natural animal growth: an allied species has a hairy covering, and it was but one step further for a hairy covering to assume a fungoid appearance, a protective resemblance to the fungi or lichens growing on the trees upon which the beetle was found.

Mr. Albert Müller made some observations on the scent, when handled, of Cynips lignicola and another species which forms a gall on the under-side of oak-leaves: this scent was probably protective, and gave the insect an immunity from the attacks of birds, &c., and the rapid spread of Cynips lignicola over the country might be due to its rejection on account of its peculiar odour.

Mr. J. Jenner Weir added that the musk beetle was free from attack by birds, and this was doubtless due to its scent..

Mr. Salvin exhibited six species of Clothilda, in illustration of the paper mentioned below.

Mr. Briggs (who was present as a Visitor) exhibited a specimen of Deiopeia pulchella, captured near Folkestone on the 1st of October: its habit was to fly only a few yards at a time, and its appearance on the wing was described as resembling one of the Geometræ.

Mr. Davis (who was present as a Visitor) exhibited a large number of preserved larvæ of Lepidoptera; amongst them a series of Cossus ligniperda, of all ages, in willow-stems, preserved *in situ;* and a larva of Sphinx populi to which were attached a number of pupæ of some parasite. There were also a few dried larvæ of saw-flies.

Mr. Dunning referred to the swarms of insects of various kinds which had been reported during the autumn: he had himself encountered hosts of Coccinellæ (principally C. 7-punctata, but intermixed with a considerable number of C. bipunctata) both in Essex and in Yorkshire; and at Walton-on-the-Naze, on the 24th of August, he fell in with a countless swarm of Syrphi, which appeared to have all hatched simultaneously and to have at once commenced buzzing about in the hot sunshine in a foolish kind of way, without caring to take food, for most of them seemed to be mere shells without any substance inside. Noticing that Mr. Horne had recorded (Newman's Entomologist, iv. 356) the occurrence of a swarm at Margate on the same day, which was said to have included specimens of Syrphus balteatus, S. decorus, S. tæniatus, S. topiarius and Eristalis tenax?, Mr. Dunning placed in the hands of

Mr. Verrall, for examination, a few remnants of the Walton swarm, and had been favoured with the following note:—

"Having looked closely through the Diptera you sent me, I find that out of fifty-six or fifty-seven specimens which I can recognize from the fragments, there are twenty-seven Syrphus ribesii, sixteen S. corollæ, eight S. pyrastri, two S. luniger, one S. balteatus, one or two S. vitripennis ?, and one S. pyrastri, *var.* unicolor. This last variety is generally rare, but has this year appeared in tolerable abundance. The specimens of S. vitripennis are in such condition that I cannot speak for certain about them: they may be small examples of S. ribesii."

Mr. Dunning remarked that only one name, S. balteatus, was common to the lists of Mr. Horne and Mr. Verrall, so that, if all were correctly named, no less than ten or twelve species of Syrphus occurred in the swarm on the S.E. coast on the 24th of August.

Mr. Verrall added that S. balteatus was rare in swarms; S. decorus he believed to be a discoloured variety of S. auricollis; S. topiarius, if British, was extremely rare, and did not occur in the Collections of the British Museum or the Entomological Club; and if Eristalis tenax occurred in a swarm of Syrphidæ, it could only have got there accidentally, as it might appear anywhere else from its universal distribution. He had once come upon the tail end of a swarm of Syrphidæ, and the stragglers seemed to be nearly all S. auricollis and its *var.* maculicornis.

With reference to the swarms of Coccinellæ, the President and Mr. M'Lachlan remarked that in this case there was no necessity to have recourse to the hypothesis of immigration, as they had both noticed, previously to the appearance of the beetles, an unusual quantity of the larvæ of Coccinellæ in the southern counties of England: the simultaneous hatching of a large number in one locality caused a scarcity of food there, and compelled many of them to move elsewhere; arriving at the sea-coast the majority were stopped, whilst some, attempting to go further, fell into the sea and were washed back with the tide. The littoral phænomena of the swarms were thus sufficiently accounted for. Mr. M'Lachlan added that the larvæ of Coccinella would eat the pupæ of their own species (see Ent. Mo. Mag. iii. 97); and Mr. Janson mentioned that, during the present season, he had had an apple-tree completely covered with black Aphides (commonly called American blight), the whole of which were cleared off in three or four days by Coccinella 7-punctata.

With reference to various letters which appeared during the autumn in the daily papers, Mr. J. Jenner Weir said that the "fireflies" reported at Caterham were the males of the common glow-worm; and Mr. F. Smith mentioned that he had a number of so-called "glow-worms" sent to him from Margate, which proved to be larvæ of Telephorus.

Mr. Pascoe remarked that, though insect-swarms were not common on or very near to the surface of the earth, there must be a great abundance of insect-life in the upper atmosphere; the destruction of insects at a considerable elevation by swifts must of itself be enormous.

With reference to the height to which insects may attain, Mr. Albert Müller recalled the fact, recorded by Mr. F. Walker (Entom. Weekly Intell. vii. 76), of the discovery of a Chlorops lineata enclosed in a hailstone which fell during a storm on the 18th of July, 1859.

Papers read.

The following papers were read:—

"New Genera and Species of Coleoptera from Chontales, Nicaragua," by the President.

"Descriptions of New Genera and Species of Hispidæ; with Notes on some previously described Species," by Mr. J. S. Baly.

"A Synopsis of the Genus Clothilda," by Mr. Osbert Salvin.

December 1, 1869.

H. W. Bates, Esq., President, in the chair.

Donations to the Library.

The following donations were announced, and thanks voted to the donors:—'Engenie's Resa' (Hymenoptera by A. E. Holmgren, Diptera by C. G. Thomson); and 'Hemiptera Africana,' by C. Stal, vols. i.—iv.; presented by the Royal Swedish Academy of Sciences. 'Entomologische Zeitung,' 1869, Parts 7—12, and 1870, Parts 1—3; by the Entomological Society of Stettin. 'The Zoologist' for December; by the Editor. 'The Entomologist's Monthly Magazine' for December; by the Editors.

Election of Members.

The following gentlemen were severally ballotted for, and elected Members:—M.M. Gustave d'Emerich, of Pesth; l'Abbé de Marseul, of Paris; Charles Oberthur, fils, of Rennes (Foreign Members); and Captain Lang, R.E., of Reigate; and Messrs. W. Arnold Lewis, of The Temple; J. Cosmo Melvill, of Manchester; and Howard Vaughan, of Kentish Town.

Exhibitions, &c.

Prof. Westwood exhibited drawings and dissections of some Hymenoptera possessing extraordinary structural peculiarities: they were principally Chalcididæ, of the genera Prionopelma and Metapelma (see Proc. Zool. Soc. 1835).

Mr. F. Smith exhibited a mass of earth-cells formed by a species of Halictus, found by Mr. J. K. Lord near Cairo. The bee burrowed into the ground to a depth of about twelve inches, and the cells were then formed, close together, and all round the shaft or tunnel, the entrance to each cell being from the central shaft. Mr. Lord described the bee as making a tubular entrance to the nest, probably of the material which was thrown out in the excavation of the vertical shaft, but the construction was too brittle or fragile for transport. Mr. Smith remarked that this tubular entrance was after the manner of Odynerus spinipes, but it was the first time he had heard of any species of bee forming such a construction.

The President said that some species of Melipona, which form their nests in the hollows of trees, construct a trumpet-shaped entrance of waxy material, or of some substance held together by a waxy cement.

Mr. F. Smith exhibited a larva-case, which he supposed to belong to a species of Œceticus, found by Mr. J. K. Lord in the plains near Mount Sinai: numbers of the larvæ were seen crawling on the sand, no tree or bush being near, and the only plant growing in the neighbourhood being a species of wild sage. The larva-case appeared to be formed principally of pieces of grass, arranged longitudinally.

Mr. J. Jenner Weir exhibited two specimens of Heliothis armiger, bred from larvæ which fed in tomatoes. An importation of tomatoes from Spain or Portugal had been greatly damaged by a number of green larvæ, with black lines and spots, which fed in the fruit, where there was apparently juice enough to drown them, and which ultimately produced the moths exhibited.

Prof. Westwood exhibited drawings and dissections of several remarkable new forms of Pselaphidæ.

Mr. Albert Müller exhibited a photograph of a Coleopterous monstrosity, a specimen of Pterostichus Prevostii with eight legs: on either side of the left hind leg (*i. e.* before and behind the normal hind leg) was a supernumerary limb of somewhat stunted growth, but structurally perfect: there were apparently three distinct coxæ fitting into three separate sockets in a single expanded trochanter. The beetle was found in Switzerland, and Mr. Müller had seen it alive: the extra legs were simply carried, and not used to assist in locomotion.

With reference to the locust exhibited at the previous Meeting (*ante*, p. xxiv.), the President had received the following from Mr. Edwin Brown:—

"I am informed that when my specimen of a new locust was exhibited at the last Meeting of the Society, it was suggested that the occurrence might have been brought about by the introduction of the insect into the brewery in an empty returned cask. I think such a suggestion is untenable, inasmuch as two specimens of the same species were captured in different parts of the town of Burton-on-Trent, and one caught in Birmingham certainly belongs to the same species. There were several other instances recorded in the papers about the same time of locusts having been captured in Worcestershire, in Nottinghamshire, and at Waterford. It has not yet been proved that these examples were all of the new species, but it is highly probable that this was so, as the peculiar positions in which the locusts have been captured this year all indicate, if I may so term it, an unsophisticated disposition of the animal, widely different from that of Locusta migratoria, which has nearly always been found in fields or gardens, whilst the species of this year has been captured in two brewery yards, in the room of a house, upon a man's coat, and (it is said) upon a lady's bonnet, but looking at the difficulty an animal so large would find in getting standing room upon a modern bonnet, there may possibly be some mistake as to the last-mentioned locality. Mr. F. Walker has identified the species as Acridium peregrinum of Olivier, which is dispersed over a large part of Asia and Northern Africa, but has not hitherto been found in Europe."

(See also, on the recent occurrence of locusts in this country, Newman's Entom. iv. 367.)

Paper read.

The following paper was read:—"Note on Boreus hyemalis and B. Westwoodii," by Mr. M'Lachlan.

January 3, 1870.

H. W. Bates, Esq., President, in the chair.

Additions to the Library.

The following donations were announced, and thanks voted to the donors:—'Proceedings of the Royal Society,' No. 115; presented by the Society. 'Proceedings of the Linnean Society,' 1869; by the Society. 'Bulletin de la Soc. Imp. des Naturalistes de Moscou,' 1868, No. 4; by the Society. 'Mittheilungen der Schweizerischen Entomologischen Gesellschaft,' vol. iii. No. 3; by the Society. 'The Tineina of Southern Europe,' and 'The Entomologist's Annual for 1870;' by H. T. Stainton, Esq. 'Equatorial Lepidoptera collected by Mr. Buckley,' Parts 1—3; by W. C. Hewitson, Esq. 'Lepidoptera Exotica,' Part 3; by E. W. Janson, Esq. 'Observations on the Parasitism of Rhipiphorus paradoxus;' by Frederick Smith, Esq. 'Réflexions et Expériences sur le vol des Coléoptères;' by M. Felix Plateau. 'Petites Nouvelles Entomologiques,' Nos. 1—12; by the Editor. 'The Zoologist,' for January; by the Editor. 'The Entomologist's Monthly Magazine,' for January; by the Editors.

The following additions by purchase were also announced:—Palisot de Beauvois, 'Insectes recueillis en Afrique et en Amerique;' Ehrenberg & Klug, 'Symbolæ Physicæ;' Brullé et Blanchard, 'Voyage de d'Orbigny;' Motschulsky, 'Etudes Entomologiques;' and Lowne, 'The Anatomy and Physiology of the Blow-fly.'

Exhibitions, &c.

Mr. Hewitson sent for exhibition a collection of butterflies, including 135 new and many rare species, all in beautiful condition, collected by Mr. Buckley in Equatorial America. With two exceptions, Heliconia Cythera and Terias Ecuadora, which were taken on the west side of the Andes, the new species were all captured between St. Ines and St. Rosa on the River Napo, within two degrees of longitude, and descriptions thereof were in course of publication under the title of 'Equatorial Lepidoptera collected by Mr. Buckley.'

Mr. Buckley (who was present as a Visitor) gave some interesting details of his stay in Ecuador. In reply to enquiries, he stated that the localities for each species were carefully noted at the end of each day's collecting; that generally speaking there seemed to be a species of Heliconia peculiar to each valley; that a few species occurred on both sides of the Andes, and in particular a Heliconia and a Morpho were mentioned; and that there was great difference in the altitudes at which the exhibited insects were collected, some of them, and in particular a Pronophila, having been taken above the snow-level.

Prof. Westwood, as an instance of partial gynandromorphism, in which the union of the opposite sexual characters was confined to a single limb, exhibited drawings of a specimen of Anthocharis Cardamines, the wings of which, for the most part male, partook to some extent of the colour and character of the female, as if pieces of the wing of the male had been cut out and replaced by pieces of the wing of the female.

Mr. Bond mentioned that a considerable number of the locust, Acridium peregrinum, had been taken in Cornwall in October: some were captured at Falmouth,

and about thirty in or near Plymouth, of which two were exhibited: most of them were found in the streets and yards of the town.

Prof. Westwood, on behalf of the Rev. Leonard Jenyns, exhibited a species of Aphodius (probably A. lividus), which was said to be frequently vomited by South-African Hottentots, who are notorious as unclean feeders; and a species of Elateridæ which was found in April, 1869, floating in a cup of tea at Bath, and was recognized by Mr. Janson as an eastern species of the genus Heteroderes.

Prof. Westwood also exhibited drawings of some new Australian Lucanidæ, of the genus Lissotes.

Mr. Pascoe exhibited a number of Curculionidæ, of the genus Catasarcus, in illustration of the paper mentioned below.

Mr. Albert Müller exhibited photographs of aberrations of Abax parallelus and Clerus formicarius; the former remarkable for its zigzag striation, the latter for the union of the two white bands of the elytra.

Mr. Quaritch (who was present as a Visitor) made a communication respecting the book-worm.

Papers read.

The following papers were read:—

"On some new British Species of Ephemeridæ;" by the Rev. A. E. Eaton.

"Descriptions of six new species of Callidryas;" by Mr. A. G. Butler.

"A Revision of the Genus Catasarcus;" by Mr. F. P. Pascoe.

"The Genera of Coleoptera studied chronologically (1735—1801);" by Mr. G. R. Crotch.

New Part of 'Transactions.'

Part 5 of the 'Transactions for 1869,' published in December, was on the table.

ANNUAL MEETING.

January 24, 1870.

Frederick Smith, Esq., Vice-President, in the chair.

An Abstract of the Treasurer's Accounts for 1869 was read by Mr. J. Jenner Weir, one of the Auditors, and showed a balance in favour of the Society of £125 6*s*. 3*d*.

The Secretary read the following:—

Report of the Council for 1869.

In accordance with the Bye-Laws, the Council presents to the Society the following Report.

During the year twenty-one Members or Subscribers have been elected, but seventeen names have been removed from the list; the numerical gain is therefore reduced to four.

The volume of 'Transactions for 1869' includes twenty-seven memoirs by seventeen authors, extends to four hundred pages exclusive of the 'Proceedings,' and is illustrated by six plates, of which two are coloured. To Messrs. E. Saunders, Higgins, Butler, F. Smith and M'Lachlan, the Society is indebted for the drawings in illustration of their respective memoirs. Every paper read, down to and inclusive of the December Meeting, was actually published before the end of the year. Especial attention is called to Dr. Sharp's Revision of the British Homalotæ, as affording tangible proof of the desire of the Council that native Entomology shall receive its due share of attention. There is yet a dearth in the 'Transactions' of papers relating to British or European insects. Many of the most active students of the productions of our own islands do not favour the Society with the results of their labours, and thus Exotic Entomology obtains the lion's share of our pages; and this leads to a supposition that our entomologists do not sufficiently identify themselves with their continental brethren. We are either exclusively British, or our range includes the whole world; and thus, between the insularity of some and the universality of others, European insects (in the broad sense) occupy but an insignificant portion of our publications. From this cause, perhaps, results the small number of our Foreign Members; and, as a consequence of that smallness, some who do give European insects a prominent place in their studies prefer to publish through the medium of Continental Societies, believing that they thereby obtain a wider circle of appreciative readers than if their lucubrations appeared in our 'Transactions.'

In addition to the 'Transactions for 1869,' the volume of the 'Third Series' which was exclusively devoted to the Malayan Longicorns has at length been finished. It was only by spreading the cost over a series of years that a Society with our limited resources could undertake a work of such magnitude, with its two dozen coloured plates; the choice lay between a separate volume issued by instalments, and the dispersion of the descriptions over three, if not four, of our ordinary tomes. To those who wish to study the group and utilize the work, it is hoped that the permanent advantage of having the whole subject complete in one volume and in unbroken sequence will more than compensate for the temporary inconvenience of unbound fragments. The Lamiidæ were commenced in 1864 and finished in 1868; the two Parts issued in 1869 include the whole of the Cerambycidæ and Prionidæ, 216 pages and five coloured Plates. Down to the present time the cost to the Society of this volume has been, in round figures, £350, and a further sum of £75 will be required for the colouring of the stock of plates—thus making a total of £425. Even this does not represent the whole cost of the work; for the entire expense of the drawing and engraving of the twenty-four Plates by Mr. Robinson has been defrayed by Mr. W. Wilson Saunders. The Society has on many occasions had to acknowledge the liberality of Mr. Saunders, whose interest in our welfare knows no diminution; and the Council feels confident that, in suggesting a special vote of thanks for this act of munificence, unique alike in its nature and extent, the Executive is only anticipating the unanimous wish of the Society.

The usual tabular statement of receipts and payments shows the following result:—

Receipts.	£	Payments.	£
Contributions of Members	237	Invested in Consols	35
Sale of Publications	76	Library	28
Interest on Consols	4	Publications	239
Donations	64	Rent and Office Expenses	61
		Tea at Meetings	14
	£381		£377

During the year four gentlemen have qualified as Life Members by paying the composition in lieu of annual contributions. Hitherto compositions have been regarded as windfalls, and spent as soon as received. The four received in 1869 have been expended, partly in the purchase of books, which is equivalent to capitalization, and partly in the purchase of Consols. This is a small beginning; but the smallest beginnings are the most difficult to make: after thirty-five years existence the Society has for the first time laid by just as many pounds out of its ordinary receipts; and the Council regards this microscopic investment as the nucleus of a fund which some day will yield an income sufficient to keep the Library regularly supplied with the current periodical literature of Entomology of this and other countries, which has now become one of our principal deficiencies.

The year 1869 was begun with a cash balance of £5 12*s.* 0*d.* and £109 14*s.* 9*d.* Consols. The year 1870 is begun with a cash balance of £9 8*s.* 3*d.* and £148 0*s.* 5*d.* Consols. The Council cannot, however, disguise the fact that, of the sum of £64 entered for donations, £50 is due to the renewed liberality of Mr. Dunning, but for which there would have been a deficit of nearly £40.

Now that the Third Series of Transactions has been completed, it becomes necessary to make ready for sale the stock of the five volumes which compose the Series; and, in fact, a considerable portion of the work has been already done, and large outlay made, principally for colouring plates. But, as the undertaking remains unfinished, no part of the expense incurred on this head has been brought into the accounts for 1869. It is left as a problem for the next Council to devise a scheme, by which, without interfering with the ordinary action of the Society, to raise a sum of £170 or thereabouts.

It has been decided to renew the offer, suspended for the last two years, of Prizes for Essays on Economical or Structural Entomology. Further particulars will be announced, probably at the next Meeting.

In spite, then, of the comparative depression which has generally prevailed throughout the year 1869, the prosperity of the Society has been maintained. Our numbers have increased, we have added largely to our Library, the interest of our Meetings has been well sustained, our publications have been issued with regularity and dispatch, and our balance is larger than at the last Anniversary. Each of these is a fair criterion of success; the combination of them all warrants the Council in believing that for the future the future will provide.

January 24, 1870.

Mr. Pascoe proposed, and Mr. Wallace seconded, a special vote of thanks to Mr. W. Wilson Saunders for the munificent gift mentioned in the Report; and this was carried by acclamation.

The following gentlemen were elected Members of the Council for 1870:—Messrs. H. W. Bates, Dallas, Dunning, Fry, Grut, M'Lachlan, Parry, Pascoe, Salvin, Edward Saunders, S. Stevens, A. R. Wallace and Wormald.

The following officers for 1870 were afterwards elected:—President, Mr. Alfred R. Wallace; Treasurer, Mr. S. Stevens; Secretaries, Messrs. Dunning and M'Lachlan; Librarian, Mr. E. W. Janson.

The following Address (in the unavoidable absence of Mr. Bates) was read by the Secretary:—

THE PRESIDENT'S ADDRESS.

—o—

Gentlemen,

The termination of another year of existence of our Society brings with it the recurrence of the annual duty which devolves on your President, of laying before you a summary of the Society's labours, and of the general progress of Entomology, during the past twelve months.

As far as we have at present learnt, the Society has lost only two Members by death during the year. These are M. le Chevalier Francfort, who had only recently been elected, and Mr. J. H. Hartwright, who had belonged to us since 1865. Neither of these gentlemen, I believe, had published anything on the subject of our favourite Science, and they were known as Entomologists only to a few friends occupied in collecting and studying the same groups.

The Report of the Council has afforded you full information regarding our numbers, income, expenditure, and so forth; and I think we have reason to be gratified at the evidence these necessary statistics afford of the steady progress and stability of the Society. It is obvious, however, when we glance at the names of contributors to popular Entomological magazines, or learn the number of their subscribers, that the majority of British Entomologists still remain out of our ranks. We have enrolled a considerable number of them during the past year, and I think many more would be induced to join us were they fully aware of the advantages which Membership offers, amongst which may be

reckoned, to country members at least, the receipt of a copy of our publications in return for their subscriptions.

The alteration in the mode of publication of our Transactions, which I announced last year, seems to give general satisfaction. The volume for 1868 was completed and ready for binding in the month of February last. Already five parts of the volume for 1869 have been issued, and the completion of the volume only awaits the printing of the Report of this evening's Proceedings. Now that the last outstanding volume of the Third Series, under the old system, has been completed, we have a clear course before us, and may look forward to the issue of yearly volumes in four or more parts, unless unforeseen delays occur, with great regularity. So far, indeed, our Society has a decided pre-eminence, in point of punctuality in the appearance of the annual volume, over all similar Societies at home and abroad.

Our publications, as in most other scientific Societies, constitute that branch of our activity by which almost alone our usefulness is judged by the outside world of naturalists; and the long array of volumes of our Transactions on the shelves of great libraries, sought after, studied and quoted, will remain the only witnesses of our labours to future generations. These considerations justify the pride we may feel in our published work from year to year. I am inclined to estimate highly the later volumes of our Transactions, as compared with other serials of the same class, and I sincerely trust that we may long continue to number among us so many writers able and willing to contribute valuable papers, as well as artists to illustrate them, and a Secretary of so much industry and good judgment as Mr. Dunning to edit them.

The volume for the past year comprises twenty-seven memoirs, of which twenty-five belong to the department of systematic or descriptive Entomology, and two only—welcome contributions from Mr. Jenner Weir and Mr. Butler, on the selection of insects as food by insectivorous animals — to other branches of the Science. To those who might object that too large a share of our work is occupied by mere descriptions, I would remark that many original and valuable observations on relationships, geographical distribution, and other deeply interesting philosophical questions, are contained in some of our descriptive papers. In fact, it is not at all a necessary consequence that a descriptive treatise should be nothing more than a string of dry definitions. It will become, I hope, more and more

the practice of Entomologists to give, together with their descriptions, the new data on relationships, distribution, comparison of faunas, &c., which the handling of such subjects most usually brings forth.

The third volume of the Third Series of our Transactions, which I have already remarked has been completed during the year by the publication of two parts, now forms a handsome faunistic work, devoted entirely, as you are aware, to the description, by Mr. Pascoe, of the Longicorn Coleoptera of the Malay Archipelago collected by Mr. Wallace. We may congratulate ourselves on the termination of this volume, published out of the usual order of our series, and on the addition that a work of so much scientific value and careful execution in every way makes to our Transactions. It consists of 712 pages, illustrated by twenty-four plates, executed with his usual ability by Mr. Robinson, and the volume is rendered further more complete by remarks on the localities by Mr. Wallace himself, and a summary of the subfamilies, genera and species, tables of distribution, and an excellent index by Mr. Dunning.

Several contributions of considerable importance have been made to the Science in this country outside our own body. Important papers have appeared, as usual, in the pages of the 'Annals and Magazine of Natural History,' chiefly from the pens of Messrs. Butler, Salvin, Andrew Murray and Wollaston. A memoir by the last-named gentleman on the Coleoptera of St. Helena, founded on a collection made by Mr. Melliss, who has been long resident in the island, is interesting as a further addition to our knowledge of the productions of oceanic islands in the Atlantic, so much of which we owe to this learned Entomologist. The Madeiran, Canaries and Cape Verde groups had already been almost exhaustively investigated by Mr. Wollaston himself, Mr. Crotch had worked out the entomological results of the exploration of the Azores by Mr. Godman, and to Mr. Wollaston has appropriately been confided the examination of by far the largest collection of insects which has yet been made in the solitary island of St. Helena. As you are aware, the great interest which attaches to the fauna and flora of oceanic islands arises from the problems involved in the modes in which they obtained their species of animals and plants, and which are rendered more complicated by the existence on some of them of

anomalous forms, representative, it is considered, of types ages ago extinct on continents. Such islands, however, differ greatly from each other as to degree of peculiarity in their productions, and it often happens that species identical, or nearly so, with those found in the nearest continent, form nearly the whole of their present inhabitants. Thus the investigation of the origin of their faunas and floras is necessarily exceedingly complex. Geology has to be invoked to ascertain whether the islands are of recent or ancient elevation above the sea-surface, and whether the supposition is admissible of a recent connection with the nearest continental land. Oceanic hydrography and deep-sea soundings have to be studied in reference to the depth of the surrounding seas, the force and direction of currents and winds; for these must all be taken into consideration in discussions on the probable derivation of the curious mixture of forms which is often found on these isolated spots. On the other hand, it must be noted that the fauna and flora themselves throw light on the geographical and geological relations of the islands to the nearest land. In fact, the classification of islands into oceanic and continental is founded quite as much on resemblance or difference in organic productions, between islands and the mainland, as on relative proximity. Thus Great Britain is classed as a continental island, quite as much because its fauna and flora are nearly identical with those of continental Europe as because it is separated only by a shallow sea, and is now known to have been actually connected in recent geological times. In these investigations Entomology is now generally admitted to have great importance, owing to the large number and variety of species which it offers, as elements in the elaborate comparisons which have to be instituted. At present authors hold the widest differences of opinion regarding the subject of oceanic islands; whilst Mr. Wollaston and Mr. Andrew Murray, following the example of Edward Forbes, maintain that the islands must, at a period geologically recent, have been connected by land with the continents from which they appear to have derived the greater portion of their species, Sir Charles Lyell maintains that geological facts and considerations quite forbid this conclusion. It is probable that the learned Entomologists just named much underrate the amount of migration and dissemination, by winds and currents and other means, which is slowly going on, and which is sufficient, in the course of the countless centuries during which the geographical

configuration of lands has remained pretty nearly the same, to have stocked distant islands with their existing species. In these discussions it is essential to bear in mind an important generalization of Mr. Darwin, namely, that the chance of the permanent establishment of immigrants as species in a locality is in inverse proportion to the degree in which the locality is already well-peopled with similar forms. On this view, a land newly emerged from the sea, or with a stock of species diminished by extinction, would in course of time be appropriated by the waifs and strays which are brought to its shores. These considerations have been well kept in view by Mr. Godman in an admirable paper on the birds collected by him in the Azores, where the fauna, to a much larger extent than in the other Atlantic islands, is made up of species identical with those of other lands, chiefly Western Europe, from which direction blow the prevailing winds. In islands like the Madeiran and Canaries groups, where there is a large proportion of endemic and peculiar forms, a great geological antiquity of the land must be inferred. There may have been, it is true, a former connection of the islands with a larger tract of land, when these peculiar forms spread over the area now consisting of islands; but this must have been at a comparatively remote period in geological time, and not at that recent date when the fabulous continent of Atlantis included them all in its expanse, as believed by Forbes and Wollaston. It is difficult to judge whether the insect fauna of St. Helena will offer such reliable data for discussions of this character as those of the more northerly Atlantic islands. As far as it is at present known, it comprises many forms not found elsewhere, amongst which is the large and remarkable Carabideous beetle Haplothorax Burchellii, and several genera of small Curculionidæ. It is not impossible that some of the smaller species may yet be found in the more arid parts of South-Western Africa, where the minute Coleoptera have not yet been well collected, but so conspicuous a creature as the Haplothorax cannot be assumed to have been overlooked, and this genus alone would be almost sufficient to warrant the conclusion that St. Helena has an endemic fauna, as peculiar as the flora it possessed before its native vegetation was destroyed. Mr. Melliss, I am glad to say, intends to continue his entomological investigation of the island, as yet barely commenced by him, and we may hope to hear yet of many curious discoveries.

The 'Entomologist's Monthly Magazine,' as usual, contains numerous short papers and notices of permanent scientific interest. The Rev. Mr. Hellins, Mr. Buckler, and Mr. Barrett continue their most accurate observations of the early stages of our native Lepidoptera, and Dr. T. Algernon Chapman has supplied further notes of the economy of various species of Coleoptera, particularly the Scolyti and other wood-borers, and of Diptera. Remarkably curious is the discovery which this original observer records of the parasitic habits of a species of Aphodius (A. porcus), which feeds on the dung-balls made by Geotrupes stercorarius, in its burrows. We are all glad to notice in a recent number of the Magazine that the Rev. Mr. Marshall has re-commenced his papers on the British Cynipidæ, undiscouraged by the crushing misfortune of the loss of his collections and library by shipwreck. Mr. Albert Müller, too, has chosen the same periodical as the vehicle of communicating some of his notes on gall-insects, a study to which he is devoting himself with much energy and intelligence. Our friends Messrs. Rye and Sharp continue their elucidations of minute points in the discrimination and synonymy of our inexhaustible native Coleoptera, and Mr. M'Lachlan publishes his valuable papers on the Hemerobiidæ and other Neuroptera. But it is especially gratifying to notice, in a recent number of the periodical, what appears to be the commencement of a set of papers on the much-neglected Diptera of our island, by Mr. Verrall. He has begun with a list of the Syrphidæ, giving the correct nomenclature according to the best continental authorities and his own researches. There is now no Order of British insects that is not studied by Entomologists of ability, and some, such as the Hemiptera, which were formerly the most despised, number many votaries. The time is probably not far distant when, by the co-operation of several of our best authorities, we may hope to see that great desideratum, a complete Catalogue of British Insects, accurately determined and in harmony with continental nomenclature. It may be perhaps necessary to remind you, for so little has been lately said about it that it is perhaps forgotten, that your Council long ago arranged for the compilation and publication of such a Catalogue. The work goes on slowly but surely, and the first Part, the Neuroptera, compiled by our best authority on the Order, Mr. M'Lachlan, the Ephemeridæ by the Rev. Mr. Eaton, is now ready for the press.

Numerous Entomological works are published in England independently of Societies and Natural-History periodicals. Some of these are serials, like Hewitson's 'Exotic Butterflies' and Stainton's magnificent 'Natural History of the Tineina,' of long standing and acknowledged merit, the number of which has been increased during the year by the 'Lepidoptera Exotica,' a quarterly work, published by Mr. Janson, on a plan similar to Mr. Hewitson's well-known publication, the plates and descriptions furnished by Mr. Butler. It is seldom that an independent work appears containing the fruits of original research in the more neglected departments of Entomology, such as are frequently published on the Continent, and especially in Germany; we have, however, to record the appearance, within the last few weeks, of a book of this class, which I think will do credit to British Science. It is the 'Anatomy and Physiology of the Blow-fly,' by Mr. B. T. Lowne, an octavo volume illustrated with ten plates and published by Mr. Van Voorst. The work contains the fruit of several years' close study of the minute anatomy and morphology of this familiar insect, and as the attention of the author has been kept alive to the morphology of the parts, and to disputed points of function of important organs, his observations have a general bearing on insects, and will be found most suggestive to students of all the Orders. There is much originality both in the facts and deductions recorded in the book, and the arrangement and style are so clear that with the aid of the figures, drawn by the author himself from his own preparations, there is little difficulty in comprehending even the most obscure details. Among the new points, the credit of which may be fairly claimed by him, is, first, the exposition of the structure and development of the integument, in which, admitting the conclusion that the derm consists of three layers, he applies to them the names protoderm, mesoderm and endoderm, rejecting the term cuticle for the outer layer or protoderm, which invests the whole surface of the insect, including even the hairs and the eyes, and forming the lining-membrane of the tracheal system, because it is quite unlike the cuticle in vertebrates, being persistent and not deciduous: the different modes in which these derms are evolved in the metamorphosis of the insect form part of the originality of his views upon them. Next may be mentioned his observations on the foot-pads, and explanation of the process by which flies can walk in an inverted position or on a

smooth surface. He here differs from recent writers on the same subject; rejecting the view that the adhesion of the foot of the fly is caused by sucker-action of the pads, or by mechanical grasp of minute inequalities of ground by the hairs with which they are furnished. His observations have led him to revert to the old opinion that adhesion is caused by a viscous secretion, an opinion which he has established as a scientific fact by working out the subject most thoroughly. The viscous secretion, he says, is forced by pressure, from a long sac contained within the four preceding tarsal joints, through each hair, and is visible by a moderately high power in the microscope, on vertical pressure of the tarsus of the fly, as a globule at the tips of the hairs. The mechanical principle on which the foot is raised again, in walking, is most ingeniously explained; and he makes the suggestion that the climbing powers of arboreal Coleoptera are due to a similar structure, which must also be that which enables the males of the Geodephaga and other tribes to grasp the smooth bodies of the females before coition; in most of these cases the soles of the tarsi being furnished with brush-like pads. Another new point is the description of the wing-muscles of the thorax and the mode of flight; the muscular action brought into play in flying being explained as similar to that in crawling, only, of course, infinitely more energetic and rapid. The longitudinal muscles of the thorax, which are of great strength, cause by their action a minute and excessively rapid rising and falling of the thoracic parietes, which act on the wings; and he was able to produce the action in dead individuals by working with a forceps in imitation of the muscles. He differs in opinion from some authorities regarding the homologies of the segments, especially of the head, which have been so greatly modified in the Insect class. The detection of a sympathetic or organic nerve-system, the structure and nature of the halteres, the nature and use of the olfactory organs, the tegumentary nature of the eyes and ocelli, and the tracheal arrangement in the eyes, may be all cited as new facts and explanations contained in the work. As general conclusions, the great relative concentration of the nervous system in Diptera, well brought out by the author, and adduced as a proof that they are amongst the most highly-organized in the Insect class, is interesting; but in this portion of the investigation he is treading more or less in the steps of continental naturalists.

I cannot quit the subject of Entomology in our own country without some notice of the labours of one of our practical Entomologists, who has much distinguished himself during the year as a collector in distant countries; for it is to the class of Entomological travellers that we are chiefly indebted for the rapid growth of our knowledge of insect forms throughout the world. Mr. Buckley, who appeared before us at our last Meeting to exhibit a portion of his collection, was about a year and a half ago commissioned by Mr. Hewitson to visit the eastern slopes of the Andes of Ecuador, chiefly to collect Diurnal Lepidoptera, and returned, after an absence of only fourteen months, with a collection of 5000 specimens in an excellent state of preservation, and including 135, or according to a freer estimation 150, new species. The discovery of so much novelty, and many of the species are very strikingly different from anything we had before seen, in a limited district, is of scientific interest, inasmuch as it shows how cautious we ought to be in our estimate of the number of species actually existing in nature, and in our comparisons of the faunas of different regions. The time, moreover, in which the collection was made is stated by Mr. Buckley to be only about two and a half months, so many weeks being lost by constant rains, and of course several months occupied by the journey there and back. The route which he followed was, after landing at Guayaquil, across the Western Cordillera by the foot of Chimborazo, to the city of Riobamba, thence by the lofty Andean road to Banos on the Upper Pastaza, and down the slopes of the Eastern Cordillera, following the valley of the river and the path which leads off to Canelos on the Bobonaza, which river he explored to Sarayacu, and then worked through the difficult forest-paths to the banks of the Napo and back. The Andes here do not sink abruptly into the great plain of the Amazons as they do in Middle Peru, further south, but form a succession of mountain-ridges, each of several thousand feet of elevation, lying more or less parallel to the main Cordillera. Through each of the deep valleys thus formed between the ranges flows a river, and it would appear that each valley contains a great amount of species peculiar to itself, for many of the most striking species in the collection are described by Mr. Buckley as being seen in one valley only. The difficult forest track in descending from Banos in an easterly direction crosses the valleys and intervening ranges successively, and the ascent of some of the latter is described

as of great steepness. The distance marched from the crest of the Andes to the Napo was about 150 miles. The whole region, hill and valley alike, is clothed with dense and luxuriant forest, and lying under the equator, with constant drenching rains caused by the condensation, on the cold edge of the Andean plateau, of the vapour-laden winds from the warm plains to the eastward, the country is a perfect hot-house, reeking with moisture, and offering the most favourable conditions to the abundance of insect life. The population is scanty, composed chiefly of semi-civilized Indians, living in small scattered villages. Food is scarce, and hunger adds greatly to the difficulties of the traveller, worn and exhausted by hard work in such an atmosphere. The remoter parts are still occupied by wild Indians hostile to the whites, and Mr. Buckley was obliged to leave many promising valleys unvisited on this account, his Indian guides refusing to encounter the risk of accompanying him. He remained as long as health and strength were able to withstand the strain to which hunger and the sweltering climate subjected them, and then returned across the Andes with his precious cargo to England.

As Mr. Buckley carefully recorded the precise locality of every specimen he took, we might expect to obtain from his journey those much-needed facts regarding the geographical relations of closely-allied species in Andean valleys, which, notwithstanding that so many collectors have worked for years past in New Granada, Ecuador and Peru, have never yet been afforded. A complete list, with localities, would be of the greatest interest, and it is to be hoped that Mr. Hewitson, who alone has had the opportunity of studying the entire collection, will accede to the general wish expressed at our last Meeting, by giving this information.

The mention of this subject leads me to make a few remarks on geographical distribution, by way of illustrating what is meant when we say that questions of high scientific importance depend upon it. The idea of the value of localities in connexion with specimens or species, with some Entomologists, I am afraid does not reach very far. They like to know in what countries the different forms are found, and perhaps, as in French collections, show the distribution by writing the specific names in their cabinets on labels coloured according to the part of the world the species inhabit; the primary divisions of the world, as Europe, N. and S. America, Africa,

Australia, perhaps West Indies, and so forth, being considered sufficient. This brings out the leading facts of distribution very well, such as the restriction of many genera and groups of genera to each of the great divisions, and the distinctive facies which all the products from one region possess; but we seldom see it carried further, and it remains a pretty association of Geography with Natural History, and no more. Results infinitely more suggestive are brought about if the student labels each *specimen* with its locality, instead of recording it on the ticket which bears the specific name placed below all the specimens, and if he is fortunate enough to be able to amass a large suite of specimens, accurately so ticketed, of genera abounding in local varieties and closely-allied species. Indications of the conditions under which varieties, local races, and perhaps species, are formed in Nature, are revealed by this method, and a field of investigation is opened which connects the study of a few insect species with some of the most difficult problems that are now engaging the attention of philosophers. The most common event that happens, when a student works at a series of species in this way, is the discovery that even the most constant species vary in some parts of their area of distribution; the next, that a small well-marked difference in a species is generally a local difference, and embraces all the individuals of the district in which it occurs. As the collection increases, further curious facts come out. It is found, for instance, that some highly-variable species give rise to one set of varieties in one area, another distinctly different set in another area, and so on; and further, that in some areas one, or perhaps more, of these variations will be better marked than, and preponderate in number over, the other varieties of the same species. Still further, it is found that in some districts one such variety alone occurs, having apparently prevailed over all the others. To be properly impressed, however, with the great truth and reality of these facts, the student should himself have travelled as an Entomological collector over an extent of country embraced by many local varieties of variable species; otherwise his attention will not be sufficiently excited to the curious facts Nature presents to him, and he will not take the trouble to amass and obtain the exact localities of numerous specimens of common variable species. Perhaps the most important result of this attention to distribution of varieties is that a fine gradation of forms or degrees of variation will be found, from the "sport" or variety, such as is liable to be

produced in the same brood, to the well-segregated race living in company with another race referable to the same stock. As such most authors, perhaps rightly, consider these latter as good and true species; and thus the formation of species out of mere variations is illustrated by the facts of geographical distribution.

But it is not this branch of the subject with which we are so much concerned, when we wish to compare the productions of the different Andean valleys and their vertical ranges, as that relating to the nature of barriers to distribution. It has been received as a principle in Zoological and Botanical Geography, that grand physical barriers, such as mountain ranges, form an impassable limit to the faunas and floras of the plains on each side of them. It is repeated, in almost every Manual of Physical Geography, after Humboldt, who I believe was the originator of the statement, that the species are all different on the two sides of the Andes of South America. Such a fact, if well established, would be interesting in many ways. First, it would throw light on the Geology of the country, as proving that the Andes must have existed as a ridge, sufficiently lofty to prevent the creatures of the plains crossing it, before the origin of the species which now people the plains on each side. Now, it is possible that this broad and important generalization may have been made on a too slender foundation of facts. Of course, in those parts of the Pacific coast-region (two-thirds of the whole line within the tropics), where the conditions of soil, climate and vegetation are totally different on the two sides of the Andes, no community of species is possible. A lofty mountain barrier would be here unnecessary, for a few steps of level road, in many parts of the world, would suffice to bring the traveller from the domain of one fauna to that of another—for instance, from an arid plain to a luxuriant forest along some river-valley. This would be a difference of "station," and not of area of distribution,—a distinction long ago recognized in Botany. The question is, then, limited to this: In those parts of the Pacific coast-region, such as Guayaquil, where a humid forest-country exists on both sides of the Cordillera, are the species of the two sides entirely distinct? This would test the efficacy of mountain-barriers better than almost any other case. For the species, at least of insects, which inhabit humid forests near the equator, are probably unable to exist at a higher altitude than 4000 or 5000 feet, and no pass over the Cordillera exists of half this depression, throughout the whole line of the Andes from

Bolivia to the Isthmus of Darien. The species could not voluntarily pass over, nor by gradual migration along the coast could they well double the end of the chain near the mouths of the Atrato and Magdalena, and so pass to the eastern side, for the Sierra Nevada bars the way.

Insects, I believe, would offer better data in discussing this question of barriers than almost any other group of land animals, or than plants; they are more limited in range than the species of birds, afford a much larger body of facts than reptiles, mammals and shells, and are not so much subject to accidental means of transportation as plants. But although many Entomological collectors have visited Guayaquil and the Cordillera, we have no published lists and no authentic information about localities. Mr. Buckley's journey offers us, then, the chance of obtaining the details so much required, as he collected assiduously all the way up from the level of the sea to the edge of the snow, and the same conversely on the opposite side, writing the locality on the envelope of every specimen.

I am inclined to think that the efficacy of physical or geographical barriers in limiting the distribution of animals and plants has been much over-estimated, and that this circumstance has vitiated much of the reasoning that has been employed in discussing various difficult problems in Natural History. By physical barriers, of course, are meant barriers of the inorganic world, such as a continuous mountain-range with regard to species of the plains, and conversely, a continuous plain with regard to species of the mountains (*e. g.* Parnassius, Erebia, Oreina, Nebria, &c.). The sea is thus a barrier to land-species, a water-shed to fresh-water species, a continuous tract of forest to species of the savannah or steppe, and so on. Barriers of the organic world, which of course are "physical" also, are quite a different set of agencies. They are the hindrances offered to the dissemination of a species by other species already in full possession of the domain, and well-adjusted to its conditions by constitution and habits. To this may be added the limitations to distribution observable without any physical obstacle being perceptible. There are certain classes of facts which seem to me to indicate that these less obvious kinds of barrier are far more effective than those more imposing ones of mountain, desert, sea, and so forth.

One set of these facts is exemplified by the well-known case of distribution of insects between the east and west in the southern part of our own island. I am not aware that comparative lists have yet been published, but it will not be disputed that many hundreds of species of Coleoptera, for instance, are known in the east, many of them abundant, which are totally unknown in the west, and a smaller number are known in the west which are not found in the east. In cases like these a difference of climate may be the cause of the limitation. But there is another set of facts requiring quite a different explanation: this is the limited ranges of closely-allied species in the plains of Tropical America. I have already elsewhere recorded the fact that, in the forest plains of the Amazons, where there is no difference of level worth mentioning, and no physical barriers, the species of a large number of genera are changed from one locality to another, not more than 200 or 300 miles apart. This is most distinctly marked on the Upper Amazons, where the country may be mapped out into areas of a few hundred square miles each, every one containing numerous species of such genera as Ithomia, Melinæa, Eubagis, Doryphora, Erotylus, &c., &c., allied to but quite distinct from their representatives in the others. From what I have seen of Mr. Buckley's collections on the eastern side of the Andes I think the same limitation of areas must occur there also; and judging from the few species I know as coming undoubtedly from the Guayaquil side of the Cordillera, the butterfly faunas of these areas in the uniform country of the east are pretty nearly as distinct from each other as the species east of the Andes are distinct from those west of the mountains. We here again feel the want of facts, such as Mr. Buckley collected, but which have not yet been published, to teach us exactly what species are found east and what west of the mountains, and how the great multitude of closely-allied species are distributed in the narrow tract explored on the east. My own observations in the level plain a few hundred miles further east show distinctly, however, that the most effective possible barriers are there opposed to the spread of hosts of species without any physical barrier existing which is perceptible by our senses. The explanation of the fact, I believe, is this, that there really are subtle differences of physical conditions from place to place, even in a uniform region; slight differences in soil, humidity, succulence of foliage, and so forth, which require in each area a re-adjustment of the constitution of any new immigrants from adjoining areas;

but that each area being kept well stocked with allied species already adjusted to its minute conditions, such migration rarely occurs. Thus a limit is put to the spread of species by species themselves, which produces similar results on the actual distribution of forms throughout the world, to those produced by mighty physical barriers such as the Andes.

There is yet one other consideration remaining. If these barriers are not required to explain the limitation of faunas, it does not follow that they do not act as barriers all the same; but it is, I think, difficult to prove it. If 1200 miles of sea do not form a sufficient barrier against the stocking of the Azores with insects from Western Europe, I do not think sixty miles of mountain should be assumed to prevent for tens of thousands of years the transport of species, in the egg state, by birds or currents of air, from one side to the other. I may add, in conclusion, that if the efficacy of barriers of this nature has been overrated, some important conclusions regarding changes on the earth's surface will have to be reconsidered; such, for instance, as that of the extension of a glacial epoch over nearly the whole earth — a hypothesis conceived by Darwin to explain the existence of the same genera and sometimes the same species in high latitudes, both in the northern and southern hemisphere, whilst absent from the intervening zones. I believe that, with some very obvious exceptions, such as Mammals and Batrachians, there can be no limit placed to the dissemination of a species, provided there are unoccupied areas suitable to it, in any part of the earth, and provided also time sufficient be allowed for the process.

The discussion of points connected with the labours of British Entomologists has extended to so great a length that but little space is left me for noticing the progress of Entomology abroad. I am not aware, however, of the appearance of many new works of striking importance on the continent or elsewhere during the year. The 'Genera des Coléoptères,' by Professor Lacordaire, has progressed to the extent of another volume since our last Anniversary, and the author's marvellous power of making a difficult subject comparatively easy shows no sign of decay. The great 'Catalogus Coleopterorum,' by Gemminger and Harold, is also advancing rapidly, the sixth volume having appeared within the last few days. The students of special groups in the Order find much to criticise and

amend in the parts that concern them, and other Entomologists object, and I think with justice, to the unnecessary and pedantic changes made in the orthography of generic names; but the work is of great use to all students as a collection of raw material which each specialist may, if he chooses, elaborate into a good Catalogue at less expenditure of time and labour than would be requisite without it.

In the 'Stettiner Entomologische Zeitung' I find a very readable paper by Peter Maassen, of Elberfeld, on a subject which will be interesting to most Entomologists. It is an attempt to compute the total number of species of Lepidopterous insects existing in nature, and is written in correction of a previous crude essay by Keferstein on the same subject. In his estimate the author takes for his basis the curious fact that in all complete lists of local Lepidopterous faunas in Europe the number of moths to butterflies is as 26 to 1. He then gets at the probable number of butterflies in existence, by arguing from the number published, districts unexplored, and so forth, and believes the number to be not fewer than 8740. Unfortunately in pursuing the calculation he forgets his datum-line of twenty-six moths to one butterfly, and takes the proportion as it stands in Staudinger and Wocke's Catalogue of European species, where the proportion of course is much less, because the smaller moths have not been so exhaustively collected throughout Europe as the butterflies. In this way he arrives at the total number existing in the world as 129,740—a surprising amount, but still far below the truth if the proportion found in well-worked districts in Western Europe is maintained throughout the world, which would produce the incredible total of 227,240 species.

With the present evening, gentlemen, terminates the second year of my office as your President, when, by our regulations, you are required to choose a successor. Permit me to thank you for the indulgence you have shown towards all my shortcomings during the two years I have enjoyed the honour of presiding over you. Should the gentleman recommended by the Council be chosen by you, as I have no doubt he will have been before the termination of this Address, it will be my great pleasure to resign the chair to one whom I esteem as my old travelling companion, and for his great attainments in Entomology and the kindred sciences.

A vote of thanks to the President for his services during the past year, with a request that the Address might be printed in the 'Proceedings,' was proposed by Mr. Fry, seconded by Mr. Grut, and carried unanimously.

Thanks were also voted to the other Officers and Members of the Council for 1869, and to the Chairman; and were suitably acknowledged.

Abstract of the Treasurer's Accounts for 1869.

RECEIPTS.

	£	*s.*	*d.*
By Balance in hand, 1st January, 1869	5	12	0
„ Arrears of Subscriptions	10	10	0
„ Subscriptions for 1869	140	14	0
„ Admission Fees	23	2	0
„ Compositions of four Life Members	63	0	0
„ Sale of 'Transactions'	75	19	6
„ Interest on £148 0*s.* 5*d.* Consols	4	8	8
„ Tea Subscriptions	12	1	0
„ Donations, E. T. Higgins, Esq.	1	10	0
„ „ J. W. Dunning, Esq.	50	0	0
	£386	17	2

PAYMENTS.

	£	*s.*	*d.*
To Rent, Librarian, and Office Expenses	61	12	2
„ Printing 'Transactions'	164	18	6
„ „ 'Proceedings'	10	8	0
„ Plates, Engraving and Printing	15	6	0
„ „ Colouring	47	16	3
„ Books purchased	19	18	0
„ „ binding	8	3	0
„ Tea, 13 Meetings	13	13	0
„ £38 5*s.* 8*d.* Consols	35	14	0
Balance in Treasurer's hands	9	8	3
	£386	17	2

Liabilities and Assets of the Society.

Liabilities.	£	s.	d.	Assets.	£	s.	d.
To Loan of Mr. Dunning	45	0	0	By Arrears of Subscriptions:—			
				Good (say)	25	4	0
				Doubtful £47 5*s.* 0*d.*			
				„ £148 0*s.* 5*d.* Consols (cost)	135	14	0
				„ Cash Balance in hand -	9	8	3
	£45	0	0		170	6	3
				Less Liabilities	45	0	0
					£125	6	3

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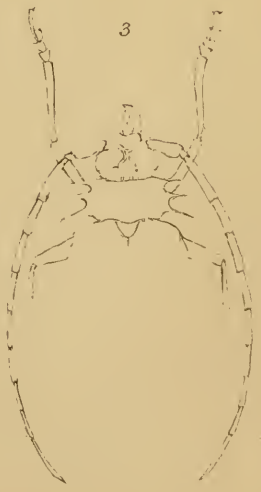

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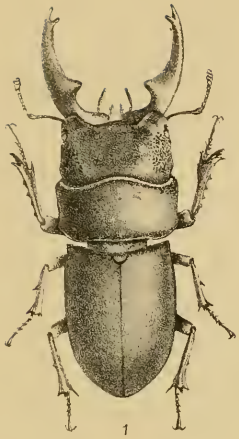

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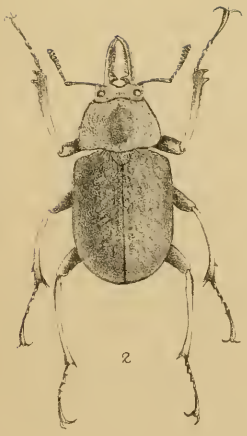

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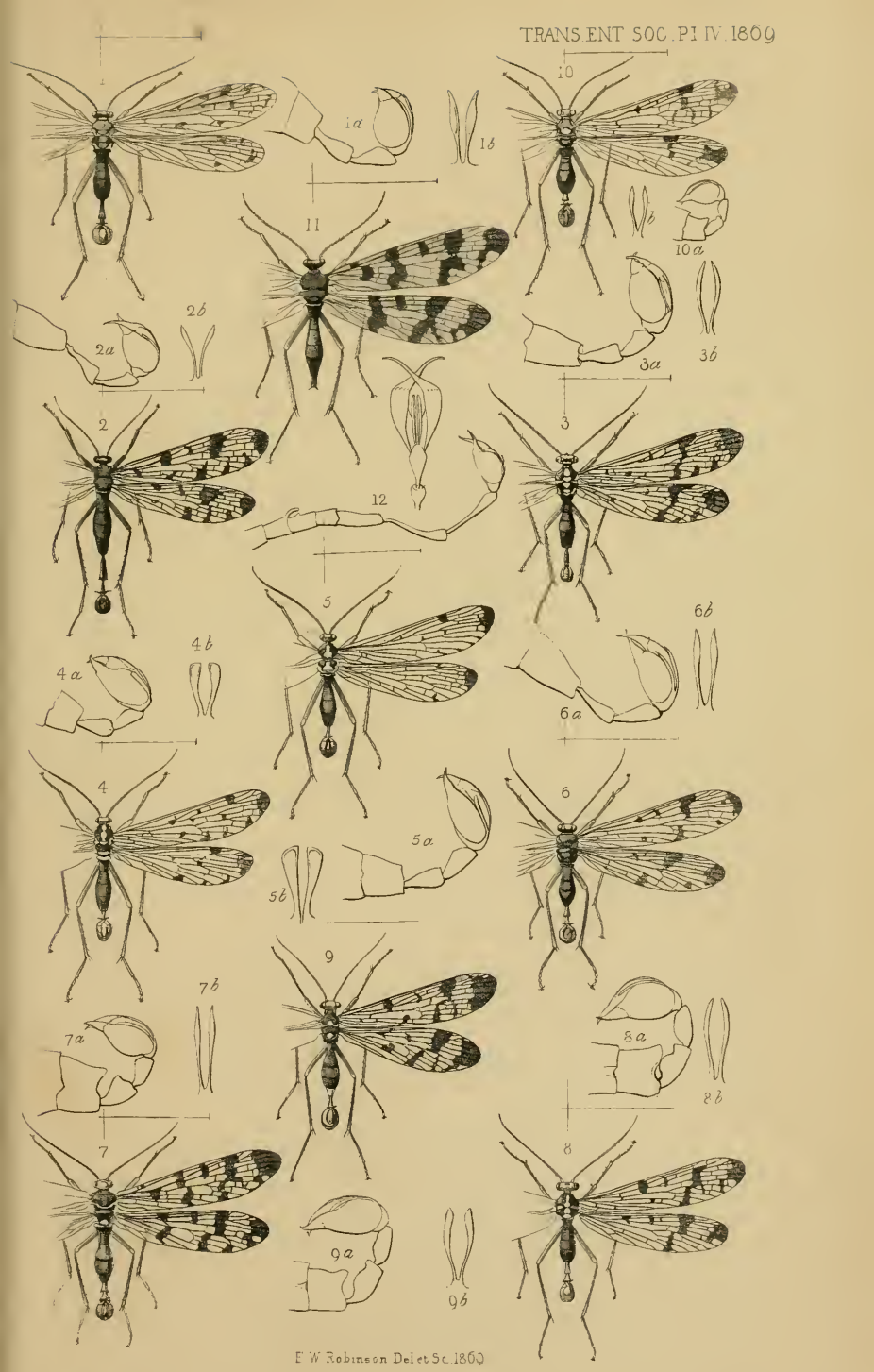

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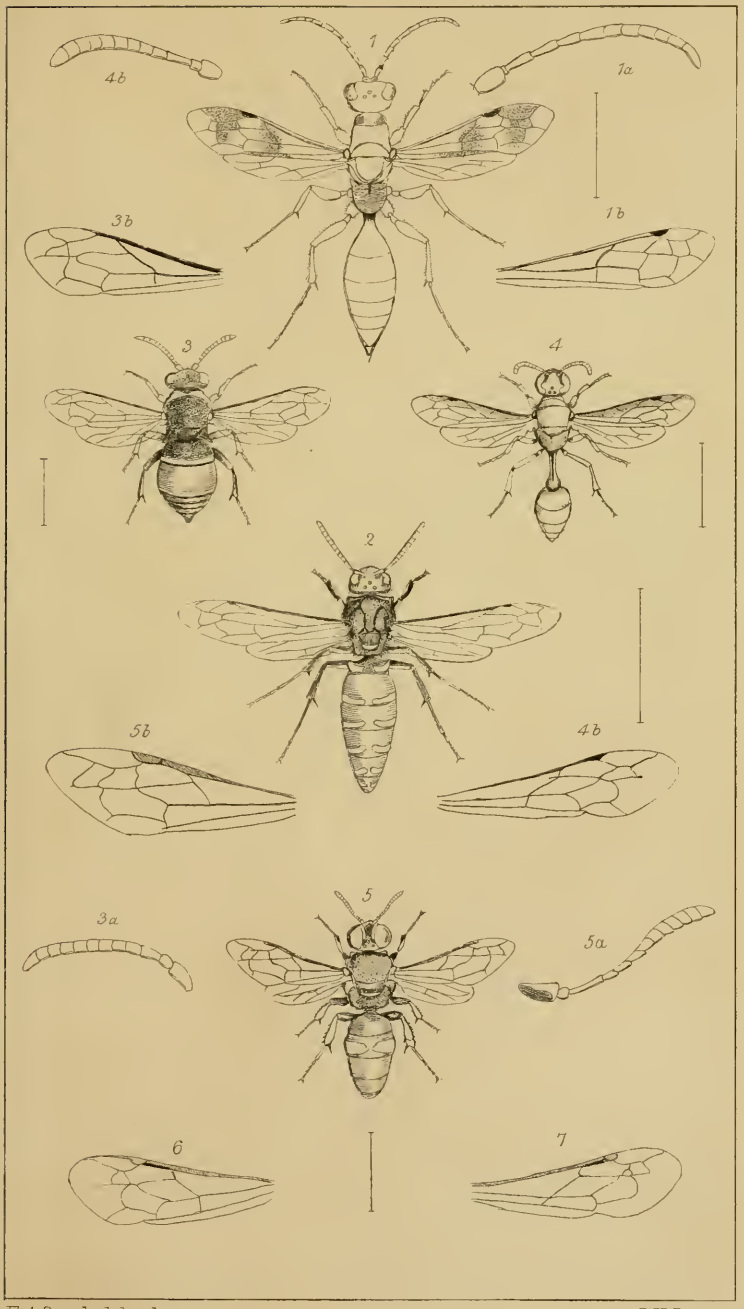

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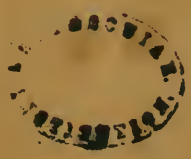

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